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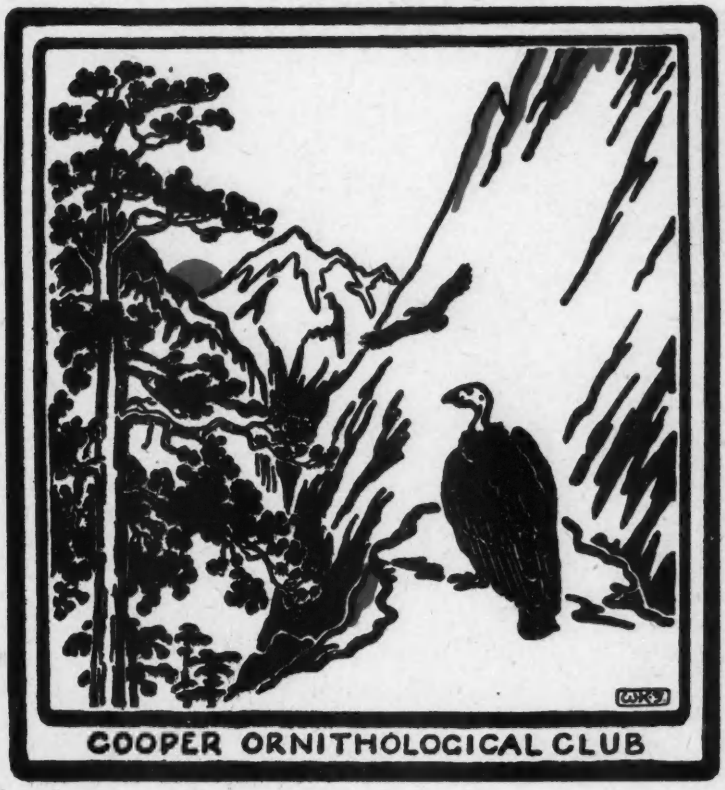
THE CONDOR

A Magazine of Western Ornithology

Volume XXXV September-October, 1933 Number 5



COOPER ORNITHOLOGICAL CLUB

THE CONDOR

A Magazine of Western Ornithology

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NESTING OF THE WANDERING TATTLER

By JOSEPH S. DIXON

WITH EIGHT ILLUSTRATIONS

For many years the location of the nesting grounds of the Wandering Tattler, *Heteroscelus incanus* (Gmelin), remained a mystery to ornithologists. The summer range is still imperfectly known. But the winter range is known to extend along the Pacific Coast from southern California south to Ecuador, to the Galapagos Islands and other islands of the South Pacific Ocean, and westward to and including the Philippine Islands. By the first of May most of the tattlers have left their winter home and are on their northward migration to their breeding grounds in the interior of Alaska, which are reached by the middle of May.

Like the Surf Bird, the Wandering Tattler spends nine months of the year along the rugged reefs, amid the flying spray of the Pacific seacoast. When the breeding season arrives the birds forsake the coast and fly far inland where they breed just above timber line along secluded mountain streams in Alaska.

The writer has been a member of six expeditions to Alaska during the past twenty-five years, covering nearly all of the coast line of Alaska and quite a bit of the interior. From this field work and from the reports of other observers he has come to the conclusion that the main nesting ground of the Wandering Tattler lies along the interior base of the main Alaska range from the region of Yakutat Bay northward to Mount McKinley. In this territory, many glacial streams from the mountains and glaciers (fig. 35), as they emerge, form numerous channels and extensive gravel bars. Here along the gravel bars and seepage waters the Wandering Tattler makes its summer home.

It is indicated clearly that two conditions are required to form a suitable nesting habitat for this species. The nest is usually placed on a rough gravel bar where the rocks vary in size from that of a grapefruit to that of a small watermelon, and here it is placed in a natural depression amid the bare rocks. However, not every gravel bar will do, for there must be seepage pools of shallow, clear water near the nest so that the downy chicks which leave the nest soon after they are hatched may find suitable foraging ground. Food in the form of small aquatic insects is apparently exceedingly important for the survival and growth of the downy young.

The first nest of this bird to be reported was discovered in 1912 by Sir Frederick Lambart of the Canadian Coast and Geodetic Survey. This nest was located about twenty-five miles south of the Arctic Ocean near the international boundary

Fig. 35. STREAMS FLOWING FROM THE INTERIOR SIDE OF THE ALASKA RANGE FORM NUMEROUS GRAVEL BARS AND MANY SHALLOW POOLS AND CHANNELS. THIS IS THE TYPICAL BREEDING HABITAT OF THE WANDERING TATTLER. HEAD OF TEKLANIKA RIVER, ALASKA. PHOTOGRAPH TAKEN JULY 18, 1932; WILD LIFE DIVISION NO. 2628.

Fig. 36. AN EXCELLENT EXAMPLE OF CONCEALING COLORATION IS FURNISHED BY THE WANDERING TATTLER, WHOSE SLATY BACK AND BARRED UNDERPARTS CAUSE THE BIRD (CENTER OF PHOTOGRAPH) TO BLEND WITH THE BACKGROUND. SAVAGE RIVER, ALASKA. PHOTOGRAPH TAKEN MAY 24, 1926; MUS. VERT. ZOOL. NO. 5270.

between Canada and Alaska. The first set of eggs to be collected was obtained by Mr. O. J. Murie of the United States Biological Survey, on the upper Savage River in Mount McKinley National Park on July 1, 1923. This nest was discovered by accident, by a camp wagon and attached team of horses being driven almost over the incubating bird on the nest. This nest was described by Murie in the *Auk* (41, 1924, p. 231) and was typically located amid bare rocks on a rough gravel bar near the main stream. It was composed of fine rootlets and small twigs which the bird had woven into a firm basket-like nest, the cup of the structure being about five inches across and about an inch and a half in depth. So durable are these nests that I have found several nests of a previous year's vintage that had remained intact throughout the winter and the following spring.

The eggs of the Wandering Tattler are unlike those of any other shore bird that the writer has examined. As a matter of fact, they are in color and shape very suggestive of certain eggs of the common crow. The ground color is "greenish glaucous" and they are heavily blotched around the larger end with blotches of "seal brown" and "burnt umber." Sets of four eggs are the rule. Broods of four downy young have been found by the writer on four different dates while two broods of three downies have been watched and studied.

The nesting date varies considerably with the year. In 1926, which was an early season, we discovered a brood of downy chicks just out of the shell on June 22, whereas, in 1932, which was a backward season, the first brood of downy young was not found until July 14, and a late brood of four downies just out of the eggs was discovered at Sable Pass on July 20.

Generally speaking, the birds are to be found foraging along the water's edge, particularly where the stream-bed is composed of fair-sized cobblestones and where the stream flows swiftly. The slatish color of the back of the bird blends surprisingly well with the rocky background (fig. 36), so that a person may be within twenty or thirty feet of a tattler and still not notice the bird. The tattlers seem to be aware of the fact that they are practically invisible so long as they stand stock still, and we found by repeated trial that they would often remain motionless and let us go by within a few yards of them. Several pairs of tattlers are to be found in summer along the upper portion of the Savage River.

In foraging, the tattlers thrust their bills down, keeping their heads in a nearly vertical position, and feel around under the water about the edges of the larger pebbles and stones. In shallow water we could see the smaller pebbles, those about the size of marbles, move as a bird worked around them and under them with the bill in search of certain fresh-water animals. Where the water was four inches deep, the bird's whole head and part of the neck were immersed for as long as ten seconds at a time, by the watch. On May 21, while we watched, one of the birds waded out into a pool of water until it got beyond wading depth. Instead of trying to fly across to the other side of the pool, this bird just sat down in the water and swam across, paddling vigorously.

The tattlers are noisy birds when flushed, particularly after the young are hatched. But during the period of incubation, the birds are remarkably quiet and secretive. The nesting sites are located on open, gravelly bars, where the accumulated rocks are about the size of cantaloupes. The nest itself is merely a depression, wallowed out by the bird, between small boulders. A scant lining of interwoven willow rootlets cradles the eggs and keeps them from coming in direct contact with the broken, sharp edges of the rocks. During incubation, the male bird was usually found standing guard, giving warning to his mate of the approach

of any and all enemies. This warning enables the brooding female to sneak off the nest, unobserved, while enemies are still at some distance. For this reason it is difficult to locate the nest of the tattler, since the eggs are spotted and colored in such a manner as to blend with the background and to render them difficult of detection, even when a person is standing almost, or quite, over the nest.

Fig. 37. THE PERCHING ABILITY OF TATTLERS, WHICH ARE TRUE WADING BIRDS, IS NOT GREAT, AND THEY HAVE CONSIDERABLE DIFFICULTY IN MAINTAINING THEIR BALANCE. NOTE LONG TOES EXTENDING ACROSS FORKS IN TWIG TO GIVE A LARGE PERCHING SURFACE. MOUNT MCKINLEY, ALASKA. PHOTOGRAPH TAKEN JULY 14, 1926; MUS. VERT. ZOOL. NO. 5297.

On May 24, a male tattler began to scold as soon as we came near his nesting ground. He then flew around us on a tour of investigation, and at length alighted in the top of a slender, dead willow (fig. 37). He then circled back over his mate, which was feeding at the edge of a nearby pool, and fluttered and paused momentarily above her while he uttered a clear *tweet tweet tweet,* very

Fig. 38. THE MALE TATTLER KEPT HIS EYE ON US AS HE FED IN SHALLOW WATER ONLY AN INCH DEEP. SAVAGE RIVER, ALASKA. PHOTOGRAPH TAKEN JUNE 22, 1926; MUS. VERT. ZOOL. NO. 5281.

much as does the Spotted Sandpiper in its mating season. When close pressed, tattlers often teeter nervously up and down, just as these sandpipers do.

Usually when a person approaches within one hundred yards of the tattler's young, the adult birds fly up and perch on the top of some willow bush. The perching ability of tattlers, which are strictly wading birds, is not very great, and they have considerable difficulty in maintaining their balance when perched in willow tops (fig. 37). However, from such vantage points they watch the intruder and warn their offspring of any approaching danger. Most of the tattler chicks heed instantly the warning of their parents and crouch motionless, with neck extended, on the gray gravel, where their gray backs blend so perfectly with the slatish color of the rocks that a person is likely to walk over or even step on them without seeing them. As long as the intruder remains in sight, the parent tattlers keep up their warning cries. However, we found that if we would walk away, apparently leaving the locality, but after going a couple of hundred yards, would retrace our steps and sneak back and watch with binoculars, the parent tattlers would soon call forth their chicks and would resume hunting for their food along the shallow margins of the clear seepage water.

On June 21, near the head of Savage River, we found a tattler feeding in shallow water only an inch or so deep. It kept its eye on us as it fed (fig. 38), reaching under stones with its bill. On June 22, as we again approached this spot, the male tattler began to chirp excitedly, the warning call being very much like the metallic warning note of the California ground squirrel. As we stood listening, we heard a faint reply to the parent's call, and looking upstream, saw a downy young tattler chick running about, seeking food along the edge of a shallow seepage pool. We ran up and caught this chick, which instead of hiding at once, had run across the open gravel bars toward a clump of willows. Upon looking around, we discovered another chick, running up the gravelly stream bed. As we ran after it, we almost stepped on the third chick, which had crouched on the rocky ground at our first appearance. The fourth and last chick in the brood was then spied, just as it was going out of sight. During this time, both parents fluttered about wildly at our feet and then flew up and perched in the tops of the willows nearby (fig. 39), from which vantage points they scolded us vigorously. When we put the chicks into our rucksack, the male tattler came up and nestled down about four feet away from the sack and then tried to call the chicks to him. This call note was the low *deedle-deedle-cherr* brooding note.

Fig. 39. THE PARENTS FLUTTERED WILDLY AT OUR FEET AND THEN FLEW UP AND PERCHED IN TOPS OF LIVE WILLOWS, SCOLDING VIGOROUSLY. SAVAGE RIVER, ALASKA. PHOTOGRAPH TAKEN JUNE 22, 1926; MUS. VERT. ZOOL. NO. 5290.

We found that the general appearance of the two parent birds was much the same. However, the male is smaller than his mate, being about one-half inch less in length. He is also darker, particularly with regard to the dark bars across the breast. In the male the white area on the chin is covered with small, faint, dark spots. The male tattler, rather than the female, showed the greatest anxiety and solicitude for the welfare of the chicks. When one of the downy young-

Fig. 40. THE MALE TATTLER HOVERED THE CHICK AND ASSUMED MOST OF THE CARE OF THE DOWNY YOUNG. SAVAGE RIVER, ALASKA. PHOTOGRAPH TAKEN JUNE 22, 1926; MUS. VERT. ZOOL. NO. 5269.

Fig. 41. THE DOWNY CHICKS ARE ABLE TO SWIM READILY, AS WAS DEMONSTRATED BY THIS INDIVIDUAL. SAVAGE RIVER, ALASKA. PHOTOGRAPH TAKEN JULY 8, 1926; MUS. VERT. ZOOL. NO. 5293.

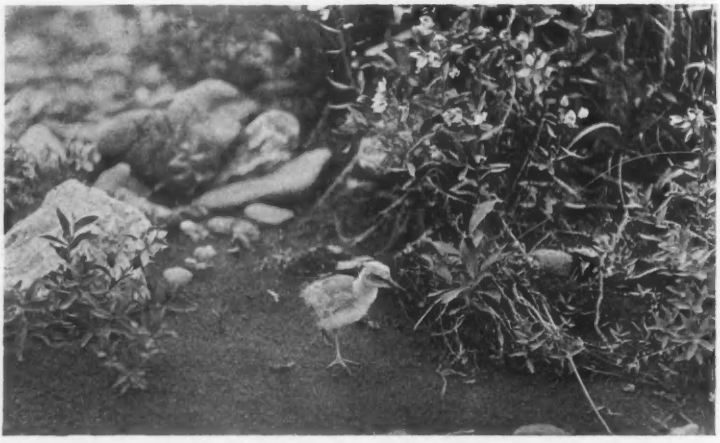

Fig. 42. WHEN ONE-THIRD GROWN, THE YOUNG TATTLER SOUGHT TO ESCAPE BY RUNNING AND HIDING IN THE DENSE HERBAGE THAT GREW ALONG THE STREAM. SAVAGE RIVER, ALASKA. PHOTOGRAPH TAKEN JULY 8, 1926; MUS. VERT. ZOOL. NO. 5296.

sters, which had been turned loose, peeped plaintively, the male tattler flew over and, with partially spread wings, hovered the chick (fig. 40), uttering a series of reassuring notes meanwhile. Then both parents coaxed and accompanied this youngster about until the chick came to a steep gravel bank, where it sought refuge under a shelving rock. At this time we saw the adult tattlers pursue craneflies which they captured on the wing, jumping clear off the ground in doing so. We watched them as they fed on small fresh-water snails and on small larvae that crawled along under stones in water which was about two inches deep.

The chicks are able to swim when first hatched, as was demonstrated by one downy youngster when he came to a place where the water was deep (fig. 41). However, the young do not take to water as readily as do the chicks of the Semipalmated Sandpiper.

By July 12 we found that the young tattler chicks had grown surprisingly and that their slate-colored primary wing feathers were already over an inch long. The gray, natal down on their backs was entirely replaced by slate-colored feathers, while on the lower breast and belly cream-colored pinfeathers had replaced the natal down. When we attempted to capture a young tattler, he sought to hide, not out upon the open gravel as he had when two or three days old, but by running and hiding (fig. 42) among the grass and flowers that grew on the stream bank. If closely pursued, he would take to the water, where he swam readily, making headway even against a fairly stiff current. By this date, when about twelve days old, young tattlers were active and fleet enough to capture flying insects that moved about the fireweed which grew in clumps about the sandy bank.

Wild Life Division, U. S. National Park Service, University of California, May 10, 1933.

SEASONAL BEHAVIOR OF SOME BANDED GOLDEN-CROWNED SPARROWS

By E. L. SUMNER, Sr.

One of the frequent questions addressed to bird-banders is "do you ever catch the same bird twice?" In the two years and eight months during which I have been trapping in Strawberry Canyon, Berkeley, I have banded 788 Golden-crowned Sparrows (*Zonotrichia coronata*). Of these 788, 406 have been trapped more than once, and the total number of times the 406 have been trapped is 3104. Mr. Michener, in Pasadena, trapped the same mockingbird 299 times in about two years and, while none of my repeats approaches that figure, one of my Golden-crowned sparrows was trapped 82 times in less than sixteen months, and the bird must have been in British Columbia or Alaska, where Golden-crowns spend the breeding season, at least half of that time. My traps are visited three times daily, but were in operation only 252 days during 1931, and 169 days in 1932.

One hundred and forty-three Golden-crowns were banded during the season of 1930-31. Twenty-two of these were recaptured in the season of 1931-32, a little more than 15%. Three hundred and thirty-one were banded during the season of 1931-32. Fourteen returned in the season of 1932-33, a little more than 4%. I do not know why the percentage of returns from the birds banded the first season should have been so much greater than from those banded the second season. The total for the two seasons is 474 banded and 36 recaptured the following season—a percentage of 7.6.

The number of "returns" reported to the Biological Survey is, of course, much greater, as all birds recaptured after an interval of not less than three months are classed as "returns." And large numbers of Golden-crowns which are banded in the fall and early winter do not appear again in my traps until spring. Such birds, possibly, spend the winter months in southern California, and stop for a day or two, or even for a few weeks, in Strawberry Canyon before resuming their trip south. One of them certainly did that, for a bird which I banded on October 21, 1931, and which repeated on November 18, was killed in San Luis Obispo on February 2, 1932. In a few instances birds which were trapped early in the fall or winter were not recaptured until about the same time the following year. Of eighteen Golden-crowns which I banded last October, none has yet been recaptured, with the exception of one which was caught four days after being banded, and which then disappeared. Some of these eighteen may turn up in my traps this fall.

Of the 788 Golden-crowns trapped in Strawberry Canyon, my records show that at least 69 spent all of one or both winters there, and it is probable that many more did, for if they had shifted their winter territory only a few hundred feet, I should not have been likely to trap them; and although the birds appear to spend the winter in the same general location, I frequently catch the same bird in traps as far as 300 yards from each other.

One reason for shifting their territory a short distance appears to be that Golden-crowns desert hills with a southern exposure when warm weather comes, even when cotoneasters and other shrubs are planted there. For this reason, apparently, I have been unable to trap any Golden-crowns at the University poultry research laboratory grounds later than early April, either this year or last. Some of the birds that leave the poultry laboratory grounds are caught a few hundred feet away, among the trees and shrubs at the bottom of the canyon, but I have no record of trapping any of them at a greater distance.

The birds may desert the dry hillsides for the bottom of the canyon because in the latter location more green food is to be had; or they may leave because they do not like hot weather. That heat appears to have an adverse influence upon these sparrows, is shown by some observations made by Dr. Linsdale and myself a year ago. We kept four Golden-crowns in captivity and weighed them three times daily for sixty days. We found that there was a marked correlation between the daily mean temperature and the weights of the birds. Whenever there was a sharp rise in the mean temperature, the weights of all four birds would drop sharply about twenty-four hours later; a decided fall in the mean temperature would be followed by a marked increase in the weights of all four. Two of these birds were males and two were females.

I have frequently taken Golden-crowns trapped on the poultry laboratory grounds and released them at the University botanical gardens, about half a mile up the canyon; and I have brought those trapped at the botanical gardens to the poultry grounds and released them there. In most cases the birds returned promptly to the place where first trapped, but a few remained for some weeks in their new location. One bird which I trapped at 5 p.m. at the poultry grounds, I carried in a cage in the bottom of my closed car, and released shortly before sunset at the botanical gardens. The next morning at eight o'clock I found it back in a trap at the poultry grounds. Did this bird return to the poultry grounds that evening, or did it spend the night at the botanical gardens? And when it left the botanical gardens did it fly high into the air, circle around until it recognized its former territory, or did it fly straight back, guided by some instinct or sense unknown to us?

My son, E. L. Sumner, Jr., has at various times released near my traps in Strawberry Canyon, a total of 65 Golden-crowns which he banded near Menlo Park, about 25 miles south of Berkeley, on the other side of San Francisco Bay. Only three of these have been recaptured by him, and all three were recaptured during the next southward migration. Of these 65, I trapped several a few days after their release in Strawberry Canyon, but only two that remained more than four days. One which he released at the botanical gardens on February 2 of this year, was recaptured by me eight times during the next thirty days, after which it disappeared. Another, which he let go in the canyon in April, 1932, was one of the three which he trapped again near Menlo Park; this one was retaken on October 16 last year, and was released next day in Strawberry Canyon. I recaptured it in November and December, but not since then.

In 1932 I kept 53 Golden-crowns in cages in the Life Sciences Building on the University campus. These birds were trapped from March 1 to April 12. Three escaped on unknown dates and were not trapped again. Twenty-five were released on June 12 and twenty-five on July 22. Both dates are long past the usual time of departure in the spring exodus—the latest date on record for Golden-crowns in California being May 12. Twelve of these birds were released on the University campus, and the remainder in Strawberry Canyon. One of the birds released was trapped the next day close to where it was liberated and has not been trapped since. One, released on July 22, was recaptured in October and has not been trapped since. Five were recaptured in November and then disappeared. One repeated six times in November and once in February. Six repeated at intervals from November to March or April. One, released in June, repeated 47 times in November and ten times in December; it has not been trapped since. One was recaptured only in March and April of this year. Disregarding the bird

which was recaptured the day after being set free, fifteen birds of the fifty, or 30%, repeated. This contrasts favorably with a repeat percentage of 7.6 for the 474 birds banded in 1930-31 and 1931-32.

All of these birds apparently left this part of the country promptly; where did they go? Fifteen repeated at times when Golden-crowns might be expected to repeat. Where did *they* go?—with the others which did not repeat, or elsewhere?

On the afternoon of April 5 of this year, I trapped ten Golden-crowns at the botanical gardens, all of which had been persistent repeaters, and took them next day in my car to southern California. They were released at 5 p.m. in a small wooded canyon near Hollywood. It will be interesting to learn when and where these birds will be recaptured, if they ever are.

It is difficult to estimate the number of Golden-crowned Sparrows inhabiting a given area, but I have made an attempt. During March of this year, I had fifteen traps in operation at the University botanical gardens, which occupy about thirteen acres. In that month I trapped 144 of these birds in the gardens, 54 of them for the first time. Apparently most of these 54 were merely passing through, as only ten of them repeated more than once. From my records it appears likely that on the entire thirteen acres the average number of Golden-crowns present during March was about 60.

Regarding the determination of the age of Golden-crowned Sparrows by their plumage, which was formerly considered a simple matter, my records confirm the conclusions reached by Mailliard (CONDOR, XXX, 1932, p. 69), that "the Golden-crowned Sparrow does not attain fully adult head markings until its third post-juvenal molt." I have trapped several birds of this species in one winter, which I had trapped the previous winter, and which were still in the so-called "immature" plumage, so that they must have been at least eighteen months old at the time they were trapped the second winter.

Berkeley, California, May 1, 1933.

AGES OF HOUSE FINCHES TRAPPED DURING FEBRUARY, 1933, AT PASADENA, CALIFORNIA

By HAROLD MICHENER and JOSEPHINE R. MICHENER

In an effort to learn more about the ages of birds, our records for House Finches (*Carpodacus mexicanus frontalis*) trapped during the month of February, 1933, were analyzed. A tabular statement of the results follows.

Total number captured, counting each individual but once in the month	247
Number of these that were immatures when banded	126
Number of these that were adults when banded	121
Number that were adults when banded previous to February, 1933	64
Number that were recorded as males when captured in February, 1933	150
Number that were recorded as females when captured in February, 1933	97
Number that were banded during February, 1933	57
Number that were banded previous to February, 1933	190

Considering only the 190 that were banded previous to February, 1933, 126 were immatures and 64 were adults when banded; that is, 33.7% of the total were adults. This is a considerably higher percentage than the total number of adults banded during a year is of the total number of House Finches banded during a year, judging from the years 1926 and 1929 for which this information has been assembled. In 1926, 2740 were banded, of which 23.1% only were adults, and in 1929, 2898 were banded of which 21.9% only were adults. This, half again larger percentage of adults among the birds captured in February than among the birds banded throughout the year might easily be due to the greater percentage mortality of the birds banded as immatures. Judging purely from their reactions to traps and trappers it is apparent that the proportion of immatures that fall prey to their enemies must be greater than that of adults.

It is only those that were banded as immatures that are of known age, within an error of a few months. Within this group there are birds that were recognized as immatures when banded from April to October, inclusive, although the great majority were banded during May, June, July and August. For simplicity the period during which immatures are recognizable as such will be called the summer.

Our analysis shows that of these 126 birds captured during February, 1933, which had been banded as immatures, 51 (33 males and 18 females) were banded in the summer of 1932 and were of an average age in February of about 7 months; 40 (26 males and 14 females) were banded in the summer of 1931 and were of an average age in February of about 1 year and 7 months; 15 (14 males and 1 female) were banded in the summer of 1930 and were of an average age of about 2 years and 8 months; 10 (8 males and 2 females) were banded in the summer of 1929 and were of an average age of about 3 years and 9 months; 7 males were banded in the summer of 1928 and were of an average age of about 4 years and 8 months; 2 (1 male and 1 female) were banded in the summer of 1927 and were of an average age of about 5 years and 7 months; and 1 female was banded in the summer of 1926 and was about 6 years and 8 months old when captured in February.

One definite statement can be made from these figures, namely, that of these 126 birds banded as immatures and recaptured in February, 1933, 89, or 71 per cent, were males and 37, or 29 per cent, were females and that this heavy preponderance of males holds true for the representatives from the last five preceding seasons although it breaks down for the sixth and seventh seasons which are represented by only 2 and 1 individuals, respectively. This may mean that more males survive either because a greater portion of the immatures are males or because a greater percentage of the males survive, or both, or that a greater proportion of the February male population than of the female population comes into the traps, or that the February population contains more males than females. No data are available which will throw further light on these questions.

It is of interest to note the decreasing number of representatives from the various summers as those summers become more remote. Beginning with last summer, 1932, these numbers are, as stated above, 51, 40, 15, 10, 7, 2 and 1.

It is impossible to know the ages of those birds which were adults when banded, but they are at least as old as if hatched during the summer previous to their banding. To establish their minimum ages the year has been arbitrarily divided at October 1 and those birds banded as adults from October 1 to September 30, inclusive, have been supposed to have been hatched during the previous summer. Using this device and neglecting for the moment the 57 adults banded during February, 1933, the remaining 64 birds banded as adults and recaptured during February can be divided according to their ages as follows: 9 (3 males and 6 females) were hatched not later than the summer of 1932 and hence were at least approximately 6 months old; 35 (22 males and 13 females) were hatched not later than the summer of 1931 and hence were at least approximately 1½ years old; 10 (3 males and 7 females) were hatched not later than the summer of 1930 and hence were at least 2½ years old; 1 female was hatched not later than the summer of 1929 and hence was at least 3½ years old; 5 (4 males and 1 female) were hatched not later than the summer of 1928 and hence were at least 4½ years old; 1 female was hatched not later than the summer of 1927 and hence was at least 5½ years old; 1 female was hatched not later than the summer of 1926 and hence was at least 6½ years old; and 2 (1 male and 1 female) were hatched not later than the summer of 1924 and hence were at least 8½ years old when recaptured in February, 1933.

Unlike those which were banded as immatures these 64 birds are almost equally divided between males and females (33 males and 31 females); also this ratio varies through a wide range for the representatives from the various summers.

The only thing known about the 57 adults banded during February, 1933, is that there were 28 males and 29 females among them. This is practically the same almost equal division that existed in the 64 recaptured birds which were adults when banded. Also it seems reasonable to suppose that the distribution of ages would be about the same for these two groups.

This study may be summarized as follows:

Of the 247 House Finches, 150 males and 97 females, captured during February, 1933, 57 were banded as adults during that month, 64 had been previously banded as adults, and 126 had been previously banded as immatures.

Stating their ages to the nearest half year the records of those birds banded previous to February, 1933, can be tabulated as follows:

IMMATURES WHEN BANDED					ADULTS WHEN BANDED				
Number	Age years	Percent total	Number males	Number females	Number	Age years	Percent total	Number males	Number females
51	½	40.5	33	18	9	½	14.1	3	6
40	1½	31.7	26	14	35	1½	54.7	22	13
15	2½	11.9	14	1	10	2½	15.7	3	7
10	3½	8.0	8	2	1	3½	1.6	0	1
7	4½	5.5	7	0	5	4½	7.6	4	1
2	5½	1.6	1	1	1	5½	1.6	0	1
1	6½	0.8	0	1	1	6½	1.6	0	1
					2	8½	3.1	1	1
126		100.0	89	37	64		100.0	33	31

As a background upon which to lay the picture presented above it should be stated that banding was started at this station on November 2, 1924, and for the calendar years, beginning with 1924, the number of House Finches banded each year was 18, 1117, 2740, 2154, 2293, 2898, 1887, 1135 and 2280.

Pasadena, California, April 15, 1933.

ITEMS FROM AN OOLOGIST'S NOTEBOOK

By JOHN G. TYLER

A short time ago the editor of one of the leading American ornithological journals, in a review of a monumental work by an author of international renown, fully concurred in a certain statement found therein and credited to a third party, to the effect that oologists can be numbered on the fingers of two hands but egg collectors are without number. This verdict having been brought in by three such eminent authorities, the present writer feels under obligation to confess that he is fully aware of the presumption evident in the selection of the title to this paper and to assure the other seven eligibles that he will promptly vacate whenever they are nominated. With this matter thus disposed of, he begs to submit a few scraps from the field notes of one who joyfully confesses to having been interested in this phase of bird study for the past thirty years and more, and who is still able to get a big thrill from inspecting a raven's nest tucked snugly into the cranny of some cliff along a rocky canyon wall. To be strictly consistent, however, the following items will, no doubt, be considered as mere by-products gathered much as a botanist might carry home an occasional beetle for an interested friend.

Plegadis guarauna. White-faced Glossy Ibis. I have frequently been impressed with the inability of small young of this species to withstand the effects of direct exposure to the rays of the sun. Even chicks a few days old perish in a few minutes if the parents are frightened away from the nest. Under normal conditions one of the parent birds stands on the nest shading the young, but if this bird vacates her position for any length of time the young quickly succumb. It should be remembered, however, that this species is not an early nester and that the mercury often runs high at that season of the year. From 100° to 108° F, in the shade, is not unusual, and most nests of the ibis are fully exposed and also usually well cut off from whatever breeze may happen to be blowing.

Young of the Black-crowned Night Heron (*Nycticorax nycticorax hoactli*) which are often found in the same communities seem but little affected by exposure which is quickly fatal to young of the ibis.

Falco sparverius phalaena. Desert Sparrow Hawk. While this little falcon is sometimes charged with being a bird killer, yet many individuals certainly are innocent of such a charge and are not feared in the least by smaller birds. On a day in January I noticed a Sparrow Hawk and a Western Mockingbird perched on the same telephone wire and paying not the slightest heed to one another's presence, although scarcely twenty-four inches of space separated them. Again, on a warm noonday in June, on the cross-arm of a telephone pole I observed one Sparrow Hawk, one Western Meadowlark and a California Shrike, each perched in the scant shade afforded by an insulator and separated from each other by only the distance between these devices.

Aquila chrysaetos canadensis. Golden Eagle. Coming, by chance, upon an eagle standing in the edge of the shallow water of a small pool in a nearly dry foothill creek, I was attracted by the actions of the bird which had all the appearance of attempting to capture something in the water. The bird allowed me to drive within about seventy-five yards before taking flight, and I noted that it seemed to be in normal health and plumage. The pool in which the bird was standing was swarming with pollywogs averaging about an inch and a half in length. This seemed rather humble fare for the king of birds.

That the eagle is still monarch of the air was amply demonstrated, however, on another day and within half a mile of the same place. A pair of Prairie Falcons (*Falco mexicanus*) in a surly mood had evidently decided to free the neighborhood of all feathered intruders. A Barn Owl (*Tyto alba pratincola*) disturbed from its hiding place in an erosion crevice in a high bank, started for a pot-hole in the cliff below the falcon's lookout perch. With a suppressed whistle of anger one of the falcons took to the air. About one hundred feet of climbing seemed to suffice and with a sudden, fierce stoop she struck the unfortunate owl, which crumpled up and fell into a deep ravine followed by a small cloud of feathers. The falcon, flushed with victory, returned to her perch on a well white-washed knob. A moment later a Golden Eagle came sailing along over the crest of the ridge and both falcons instantly went in pursuit, harassing the big bird from every angle. The eagle sailed serenely on his way with no attempt at defense or retaliation. The falcons became bolder and as one of them closed in, the eagle suddenly turned on its side and caught his antagonist totally unprepared to dodge a terrific blow from the full sweep of one wing. The falcon fell nearly to the earth, an estimated distance of two hundred feet, before it recovered sufficiently to go whimpering back to its perch, closely followed by its mate, while the eagle continued on its way unperturbed.

Zenaidura macroura marginella. Western Mourning Dove. I had always considered the dove as one of our fastest flying birds among the smaller species and was glad to be able to test the matter on three different occasions with the following results. A single dove, coming in to roost at sundown, paralleled my car for about 200 yards and kept even with me at just 36 miles per hour. On another occasion three doves, flying against a rather heavy wind, were paced at 35 miles per hour. They attempted to cross in front of me but seemed unable to increase their speed and could only cross the road after I had slowed down to about 30 miles. A single dove on a calm August day came alongside my car and in traveling an estimated distance of one hundred yards gradually drew ahead of me. I happened to be making 30 miles per hour and maintained that speed until the bird had gained noticeably. A Western Meadowlark greatly surprised me by making a two hundred yard flight only a few yards from the edge of the highway, and with no apparent extra exertion keeping in the same relative position to my car during the entire flight. I was making 40 miles per hour at the time. The lark was employing its characteristic low, direct flight with alternate periods of sailing and rapid wing-beats. The best a California Horned Lark (*Otocoris alpestris actia*) could do under similar conditions was 28 miles per hour.

Without submitting figures to support the statement, I am convinced that one of the fastest flying birds among the passerine group is the Brewer Blackbird (*Euphagus cyanocephalus*). When just moving from tree to tree or from place to place in short flights in a field this species moves in a leisurely fashion, but when really going places, the birds skim along just above the ground in a manner of flight much like that of the flocks of Tri-colored Blackbirds when moving northward in their spring flights; at such times their speed is much greater than anyone who has not paced them down a pasture lane, would ever believe possible.

Psaltriparus minimus californicus. California Bush-tit. A nest of this species suspended from a lower branch of a live-oak tree upon discovery was not disturbed any more than was necessary to ascertain the contents, which consisted of an incomplete set of eggs. Passing the same tree a few days later I discovered one of the birds in the branches nearby, while the other, as it afterwards proved,

was inside the nest and just below the entrance. What sort of antics the latter was going through I could not determine. The entire nest was being frequently, rapidly and violently vibrated and I marveled that a creature so small and so closely confined in the narrow neck of the nest, could produce so much disturbance.

After watching for a few moments I grasped the branch and jerked it rapidly but gently. The effect on the nest, so far as I could see, was not unlike what I had just been witnessing, but my technique was evidently faulty as the bird came hustling out of the nest to see what it was all about. To this day no satisfactory explanation of this bush-tit's actions has been forthcoming.

Botaurus lentiginosus. American Bittern. I had sometimes wondered how a bird so lacking in flesh and so scantily feathered could generate enough warmth to incubate eggs in the make-shift nest which this species often constructs. The problem was solved when a Bittern, sitting on a fully exposed nest in a thin growth of marsh grass growing in about ten inches of water, was approached to within six feet before she slowly arose and revealed the fact that her legs were nicely doubled up under her and held about one inch apart. The eggs were balanced in the groove thus formed on the tarsi and were, in this manner, held snugly against her body, and not in contact with the nest material at all. No wonder, after letting the eggs roll off her shins onto the nest platform, that this Bittern sprang into the air and went bellowing away, her voice sounding not unlike that of a Great Blue Heron when forced to take wing from a favorite slough.

Corvus corax sinuatus. Western Raven. A chick just out of the shell in a nest which I chanced to examine gave me an opportunity to record a description of his appearance which was quite unlike that of a nestling raven a few days older. This young bird was entirely a rich orange color, including legs, feet and bill, the bill however, being paler colored toward the tip. The chick appeared to be entirely naked save for a sparse growth of inch-long bluish filaments along the spine. The bird was blind but with large blue bulges at either side of the head indicating the location of eyes. It was able to move about in the nest in a rather limited way and occasionally gave voice to a single note—a somewhat harsh squeak which was clearly audible at a distance of thirty feet.

The orange color in a young raven soon fades out, leaving the skin a dirty flesh color, and in a few days the body grows out of all proportion to the head. Each day the young bird becomes more repulsive in appearance, and in my opinion, even a young cormorant must yield the palm to a ten day old raven when it comes to utter unattractiveness.

On one occasion I had with me on a field trip a companion who had had no previous experience with this bird nor with the type of country which it inhabits. Finding an easily inspected nest on a dirt bank, I called this man to come over and see the three young birds as they lay sprawled out amid the most unsanitary nest conditions imaginable. As we climbed out of the gulch on the way back to the car, I recalled the fact that my companion had not enthused in the manner that the occasion seemed to demand. In fact he had made no comment whatever. Well! what did you think of them? I queried. He flashed a quick look of disgust and replied, "No sale! Only a mother could love those little devils!"

Fresno, California, May 3, 1933.

FURTHER NOTES ON THE BIRDS PARASITIZED BY THE RED-EYED COWBIRD

By HERBERT FRIEDMANN

In the Auk (48, 1931, pp. 52-65) I brought up to date what was known to me of the birds parasitized by the Red-eyed Cowbird (*Tangavius aeneus*), beyond the material first elaborated in my book (The Cowbirds, 1929). Since then I have accumulated a considerable amount of new data, chiefly based on unpublished material in private collections. The following gentlemen have kindly sent me records for incorporation in this paper and to them I express my indebtedness: G. Bancroft, San Diego, California; C. E. Doe, Gainesville, Florida; A. M. Ingersoll, San Diego, California; A. E. Price, Grant Park, Illinois; M. Schönwetter, Gotha, Germany; and J. T. Wright (present whereabouts unknown—in the field in Mexico).

The following are additions to the known victims of the Red-eyed Cowbird and its subspecies. They bring the total of host species and subspecies up to 32 forms, an increase of 10 over my previous list.

Melopelia asiatica mearnsi Ridgway. Western White-winged Dove.
Tyrannus melancholicus occidentalis Hartert and Goodson. Western Kingbird.
Tyrannus melancholicus couchii Baird. Couch Kingbird.
Myiozetetes similis texensis (Giraud). Giraud Flycatcher.
Platypsaris aglaiae albiventris (Lawrence). Xantus Becard.
Catharus melpomene costaricensis Hellmayr. Costa Rican Thrush.
Vireo flavoviridis flavoviridis (Cassin). Yellow-green Vireo.
Piranga rubra cooperi Ridgway. Cooper Tanager.
Passerina ciris pallidior Mearns. Texas Painted Bunting.
Arremonops conirostris richmondi Ridgway. Richmond Sparrow.
Aimophila rufescens rufescens Swainson. Rusty Sparrow (hypothetical).

If we list them according to the subspecies of cowbird, we get the following:

a. **Tangavius aeneus aeneus** (Wagler). Bronzed Cowbird.
Melopelia asiatica mearnsi Ridgway. Western White-winged Dove.
Tyrannus melancholicus occidentalis Hartert and Goodson. Western Kingbird.
Myiozetetes similis texensis (Giraud). Giraud Flycatcher.
Platypsaris aglaiae albiventris (Lawrence). Xantus Becard.
Piranga rubra cooperi Ridgway. Cooper Tanager.

From previous lists delete *Atlapetes gutturalis parvirostris* Dwight and Griscom. This brings the list of hosts of this race of the cowbird up to 13 forms.

b. **Tangavius aeneus involucratus** Lesson. Red-eyed Cowbird.
Tyrannus melancholicus couchii Baird. Couch Kingbird.
Catharus melpomene costaricensis Hellmayr. Costa Rican Thrush.
Vireo flavoviridis flavoviridis (Cassin). Yellow-green Vireo.
Passerina ciris pallidior Mearns. Texas Painted Bunting.
Arremonops conirostris richmondi Ridgway. Richmond Sparrow.
Atlapetes gutturalis parvirostris Dwight and Griscom. Yellow-throated Sparrow.
Aimophila rufescens rufescens Swainson. Rusty Sparrow (hypothetical).

The hosts of this race now total 20 plus 1 hypothetical form. In the following annotated list these are treated in more detail as well as several forms concerning which new data of significance have been compiled.

1. **Melopelia asiatica mearnsi** Ridgway. Western White-winged Dove. One record. Mr. J. T. Wright informs me that at Guirocoba, District of Alamos, Sonora, during the latter part of May, 1931, he found a nest of the western white-winged dove with one egg of the dove and one of the bronzed cowbird.

2. **Tyrannus melancholicus occidentalis** Hartert and Goodson. Western Kingbird. One record; a nest found by A. Forrer at Mazatlan, Mexico, June 14, 1882, containing four eggs of the kingbird and one of the bronzed cowbird; the set now is in the collection of the Florida State Museum.

3. **Tyrannus melancholicus couchii** Baird. Couch Kingbird. One record, a set of 3 eggs with 2 of the red-eyed cowbird, collected at Brownsville, Texas, May 24, 1902, by F. B. Armstrong, and now in the collection of Mr. A. E. Price of Grant Park, Illinois, to whom I am indebted for this record.

4. **Muscivora forficata** (Gmelin). Scissor-tailed Flycatcher. To the very little previously recorded of this bird as a host of the red-eyed cowbird may be added one more record: a set of 2 eggs of the host and 1 of the red-eyed cowbird, collected in Lee County, Texas, May 20, 1887, now in the Field Museum.

5. **Myiozetetes similis texensis** (Giraud). Giraud Flycatcher. One record. A set of 4 eggs of the flycatcher and 1 of the bronzed cowbird, collected at Presidio, Sinaloa, Mexico, May 15, 1881, by Professor A. Forrer, and now in the collection of Mr. A. M. Ingersoll.

6. **Platypsaris aglaiae albiventris** (Lawrence). Xantus Becard. One record has come to my notice. In his Price List of Exotic Birds'-Eggs for 1899, W. Schlueter lists a set of this bird (under the name *Hadrostomus albiventris*) with an egg of *Tangavius aeneus aeneus*.

7. **Catharus melpomene costaricensis** Hellmayr. Costa Rican Thrush. Cherrie (Auk, 8, 1891, p. 273) saw one of these thrushes feeding a fledgling red-eyed cowbird near San Jose, Costa Rica.

8. **Vireo flavoviridis flavoviridis** (Cassin). Yellow-green Vireo. One record. Mr. E. J. Court informs me that he had at one time in his collection a set of eggs of this bird containing one of the red-eyed cowbird, collected in Costa Rica.

9. **Agelaius phoeniceus richmondi** Nelson. Rio Grande Red-wing. Merely listed by me (Auk, 48, 1931, p. 65); the data are as follows: A set of 2 eggs of the red-wing and 1 of the red-eyed cowbird, Camargo, Mexico, June 29, 1890, collected by T. H. Jackson. Another set of 4 eggs of the host and 1 of the parasite, collected in Hidalgo County, Texas, May 18, 1889, by J. A. Single. Both sets are in the J. P. Norris collection.

10. **Icterus cucullatus nelsoni** Ridgway. Arizona Hooded Oriole. A second record of this oriole as a victim of the bronzed cowbird is as follows: a parasitized set from Tombstone, Arizona, collected by F. C. Willard, June 26, 1913, and now in the J. P. Norris collection. A third is a parasitized set found near Oracle, Arizona, June 1, 1932, by Clyde L. Field.

11. **Icterus spurius** (Linnaeus). Orchard Oriole. To the few known records (from Texas) may be added one from Camargo, Mexico, now in the J. P. Norris collection.

12. **Icterus pustulatus** (Wagler). Scarlet-headed Oriole. I merely listed this bird before (Auk, 48, 1931, p. 65). The data are as follows. Bailey (Auk, 23, 1906, p. 390) found a parasitized nest in the general region of San Blas, Mexico.

A second record for this oriole has come to my attention. In his price list of birds' eggs for 1899, W. Schlueter lists a set of two eggs of this bird and one of *Tangavius aeneus aeneus* from Mazatlan, Mexico. Mr. Griffing Bancroft writes me that at Guaymas, Sonora, Mexico, he found this bird to be victimized by *T. a. aeneus*.

13. **Piranga rubra cooperi** Ridgway. Cooper Tanager. One record: J. T. Wright informs me that on August 28, 1929, at Saric, Sonora, he saw a Cooper tanager feeding and solicitously attending a young bronzed cowbird.

14. **Richmondena cardinalis canicaudus** (Chapman). Gray-tailed Cardinal. To the few previously known records of the gray-tailed cardinal as a victim of the red-eyed cowbird may be added the following data. The U. S. National Museum has 2 single eggs of the red-eyed cowbird taken from nests of this cardinal at Brownsville, Texas.

15. **Passerina ciris pallidior** Mearns. Texas Painted Bunting. One record. In the collection of Mr. A. C. Bent is an egg of the red-eyed cowbird taken from a nest of a painted bunting by H. P. Attwater at San Antonio, Texas, in April, 1895.

16. **Pipilo rutilus** (Lichtenstein). Sclater Towhee. Previously known from one record: a set now in the J. P. Norris collection, two eggs of the towhee and 2 of the

red-eyed cowbird, collected at Etla, Oaxaca, Mexico, May 20, 1912. To this may be added two other parasitized sets, collected during May in Oaxaca, now in the Field Museum.

17. **Arremonops conirostris richmondi** Ridgway. Richmond Sparrow. Herr Schönwetter informs me that he has in his collection a set of 1 egg of this finch with 1 egg of the red-eyed cowbird, collected in Costa Rica, on July 1, 1912, by Grolepp. He also writes that there are two other similarly parasitized sets, also collected in Costa Rica by Grolepp, in the collection of Herr H. Domeier of Göttingen.

18. **Atlapetes gutturalis parvirostris** Dwight and Griscom. Yellow-throated Sparrow. Alfaro (Paginas Ilustradas, 1, no. 2, March 22, 1904, p. 180) writes that the cowbirds (*T. a. involucratus*) deposit their eggs in the nests of this bird in Costa Rica. In my book (pp. 328, 333) I erroneously referred records of this bird to *T. a. aeneus* instead of *T. a. involucratus*.

19. **Aimophila rufescens rufescens** Swainson. Rusty Sparrow. Not definitely recorded as a cowbird host, but Sumichrast (La Naturaleza, 1, 1870, p. 309) writes that this sparrow (there called *Haemophila rufescens*) is probably a common host of the red-eyed cowbird in Vera Cruz. Herrera (La Naturaleza, 3rd ser., 1, no. 2, 1911, p. 124) writes that it is a host of *T. aeneus* (*involucratus*) in high country, apparently on the basis of Sumichrast's statement.

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GEOGRAPHIC VARIATION IN THE NORTHERN WATER-THRUSHES

WITH ONE ILLUSTRATION

By THOMAS T. McCABE and ALDEN H. MILLER

Knowledge of geographic variation in the Water-thrush (*Seiurus noveboracensis*) up to the present has led to a concept of two races within the species. Of these the one breeding in western North America has been characterized by Ridgway (Birds N. and Mid. Am., II, 1902, pp. 645-646) as larger, less yellow beneath, and less olive and more sooty above in contrast to members of the eastern population. Frequently it has been diffiicult to assort birds from intermediate points and from regions apart from the centers of differentiation into the two subspecies. (See Taverner, Ottawa Nat., XXXIII, 1919, p. 18). As with many other instances of incipient geographic differentiation, even in the geographic centers of one of these races individuals may appear with characters that show a considerable approach to the other race. Geographic segregation and correlation of characters (presumably heritable) are incomplete not only at the borders or zones of intergradation but to some extent throughout each race. The degree of character segregation which shall be set, arbitrarily, as the minimum basis for separate nomenclatural treatment is of little moment and will ever be open to discussion because of varying philosophies of taxonomy and the inflexibilities of our artificial Linnaean classification. We have attempted to make some progress in understanding the *trends* of geographic variation in *Seiurus noveboracensis* and to determine the extent to which characters are uniform and segregated in the races.

We are indebted to the following persons for opportunity to study water-thrushes either in their personal collections or in collections in their charge: Mr. Ralph Ellis; Mr. Reed Ferris; Mr. Joseph Mailliard; Mr. Kenneth Racey; Mr. H. S. Swarth, of the California Academy of Sciences; and Dr. Alexander Wetmore, of the United States National Museum. With the addition of material in the Museum of Vertebrate Zoology and the McCabe collection, about 150 specimens have been available. We have been especially fortunate to have at hand on loan from the National Museum the type of the Alaskan race, *notabilis*.

The three general characters, color of dorsum, yellow of underparts, and size, which Ridgway treats, are the only ones we have found to be geographically variable. Comparing birds of the Atlantic coast region with those breeding in Alaska we find that in the former the color dorsally of those in fresh plumage (10 specimens) is distinctly greenish (dark greenish olive). This is evidently the olive of the eastern bird to which Ridgway refers (*op. cit.*). The greenish hue is apparent especially in freshly molted July- and August-taken specimens. Fresh plumages of Alaskan birds (11 specimens) are much more neutral, almost lacking in green, and with a faintly reddish hue visible in certain lights; the mass effect is near olive brown. In worn spring plumages these delicate shades of green and red are lost for the most part, and the difference in the two populations impresses one as being chiefly that of differing values of the same color, the Alaskan group being the paler. From these geographic extremes, birds may in all cases be separated as regards color of the back in fresh plumage. In spring plumage there are two or three skins that might be confused; these are specimens, apparently somewhat soiled, in the Alaskan group (21 specimens) that appear practically as dark as the eastern series (10 specimens).

Color of the underparts of Alaskan birds is much whiter in series than is that of Atlantic coast specimens. The character is subject to more individual

variation than is the color of the dorsum. We are not able to detect any orderly change in the yellow as between fresh plumages and worn spring plumages. Possibly there is some paling of the yellow as Dwight has indicated (Annals N. Y. Acad. Sci., XIII, 1900, p. 276), yet in series from the same locality spring plumages are not perceptibly paler. Out of thirty-two Alaskan birds in various plumages we found three that could not be segregated from the eastern group.

AVERAGE MEASUREMENTS IN MILLIMETERS OF *Seiurus noveboracensis*

Group	Males No.	Wing	Tail	Tarsus	Females No.	Wing	Tail	Tarsus
Atlantic Coast, migrants and summer residents	11	75.22	50.88	20.75	5	72.40	50.13	20.96
Upper Mississippi Valley, migrants	7	74.74	50.85	20.96	6	72.72	50.14	21.23
Lake Athabasca, summer residents	4	74.24	50.73	21.21	3	72.84	48.23	21.24
Mackenzie Valley, summer residents	6	74.74	51.47	21.79	..	.....	.....	.....
Rocky Mts. of United States chiefly migrants	6	77.51	54.13	21.91	..	.....	.....	.....
Alaska, summer residents	16	76.71	53.22	21.44	14	73.53	50.65	21.74
Northern British Columbia, summer residents	6	73.45	51.50	21.67	..	.....	.....	.....
Central British Columbia, summer residents	11	73.65	51.82	21.35	..	.....	.....	.....

Size is perhaps best represented by wing length, although tail and tarsus measurements, as may be seen in the table, show somewhat similar trends of variation.

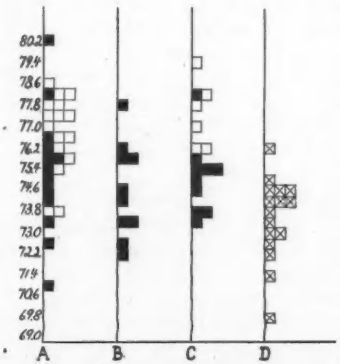

Fig. 43. WING LENGTHS OF MALE WATER-THRUSHES, IN MILLIMETERS. SIZE CLASSES INDICATED AT LEFT OF GRAPH; EACH SQUARE REPRESENTS A SINGLE BIRD. A. SOLID SQUARES, ATLANTIC COAST MIGRANTS AND SUMMER RESIDENTS; OPEN SQUARES, ALASKAN SUMMER RESIDENTS. B. SUMMER RESIDENTS OF LAKE ATHABASCA AND UPPER MACKENZIE RIVER. C. SOLID SQUARES, MIGRANTS FROM THE UPPER MISSISSIPPI VALLEY; OPEN SQUARES, CHIEFLY MIGRANTS FROM ROCKY MOUNTAINS OF UNITED STATES. D. SUMMER RESIDENTS OF CENTRAL AND NORTHERN BRITISH COLUMBIA.

Bill length is not greater in the western populations, contrary to Ridgway's statement (*op. cit.*, p. 645); in our series it is actually, on the average, smaller. The average difference between Alaskan and Atlantic coast groups in wing length amounts to about 2 percent in males. Between the groups from the Mississippi and

Mackenzie valleys (including Lake Athabasca) and those from the Rockies of the United States the difference is about 3.8 percent. The numbers of females available are in most instances too small to warrant a fair comparison. In such a quantitative feature as wing length the degree of segregation geographically of the size groups may be illustrated graphically (fig. 43A).

From this graph, the considerable overlap of eastern and Alaskan groups is obvious. A few widely variant individuals occur in each group; but even apart from these the solid massing of each of the two groups shows a pronounced overlap. Nevertheless, the difference indicated by the averages is also apparent in the higher mode of the Alaskan group.

Our material has permitted of two groupings of individuals from areas intermediate geographically between Alaska and the Atlantic coast. One of these is a series taken in late May and June, and without much doubt breeding, from the vicinity of Athabasca Lake, Alberta, and from the upper (southern) Mackenzie River. Only one fresh plumage from this section is at hand. It is indistinguishable in dorsal coloration from eastern birds, but is as pale below as Alaskan birds. It is of small size. Coloration dorsally and ventrally of the series of spring-taken specimens (12) can only be described as intermediate between the two extremes. Individually many split the slight difference between Alaskan and eastern races and so are to be separated with difficulty from either. Others are entirely inseparable from one or the other of the extremes. The mass effect of the series is that of coloration very close to a point mid-way between extremes. Wing length and tail length, both as to averages and distribution of individuals in size groups, are essentially the same as the eastern population, and no intermediacy is suggested (see fig. 43B). The tarsus, however, is similar to the Alaskan series.

The second geographically intermediate series is a group of mid-western birds (17) chiefly from Illinois and Wisconsin. They all were taken off their breeding grounds, yet many were close to the breeding area. It is to be supposed that they represent birds that breed in Minnesota, Michigan and adjacent parts of Canada. We can distinguish neither the fresh or worn plumages from the Atlantic coast series. The average size and the distribution of size classes correspond with eastern populations (see fig. 43C, solid squares).

The generally accepted view that the water-thrushes breeding in northern Michigan are of the western type we can not concur in, if this sample of migrants is a justifiable criterion. This does not mean, however, that the Mackenzie region contains the only intermediate population. Since summer resident water-thrushes of Minnesota have been spoken of as the western race or as intermediates (Roberts, The Birds of Minnesota, Univ. Minn. Press, II, 1932, p. 251) and since Taverner (*loc. cit.*) encountered a mixture of types at Shoal Lake, Manitoba, it is more than probable that the condition of mixed eastern and Alaskan characters prevails through a wide belt in interior Canada. Only at the extremes, then, do we find a segregation of color characters that may be said to constitute a race. The character of size (wing and tail length) does, however, exhibit no intermediacy in this wide interior belt. The shifting of the average from the eastern to the Alaskan figure must take place west of the upper Mackenzie Valley. If our figures for tarsal length are reliable, the slight change in this dimension takes place east of the Mackenzie, possibly beginning in the longitude of Wisconsin.

Water-thrushes are known to breed in northwestern Montana and adjoining parts of Idaho and British Columbia, but an almost complete lack of unequivocal

samples greatly limits our analysis of variation in this area. Only two birds represent the breeding population. One is an immature male taken July 24, 1860, at Camp Mooyie, British Columbia. [This is listed in Ridgway (*loc. cit.*) as Camp Moogie, Washington. The camp was one of those of the Northwest Boundary Survey just north of the United States Boundary opposite the Idaho-Montana line on the Mooyie (now Moyie) River.] The second bird is a male taken June 13, 1878, at Florence, Montana. It is, without any serious doubt, a breeding bird, although the date is not much more than two weeks later than the migratory wave through this region. (See Cooke, Biol. Surv. Bull., 18, 1904, pp. 105-106.) Both birds are large, wings 77.71 mm. and 78.32 mm., respectively, and in coloration match the extreme of pale breast and light olive brown dorsum of the Alaskan series. Six other birds, migrants from the northern Rockies of the United States, match both the Alaskan series and these two summer residents perfectly as to size and color. The distribution of size classes is seen to compare closely with that of the Alaskan group and to stand in sharp contrast to the mid-western migrants (see fig. 43C). The type of *notabilis* from Como [Lake], Carbon County, Wyoming, taken May 19, 1878, is one of this group of migrants. It represents, therefore, either the breeding population of Montana or Alaska, both of which nomenclaturally must be termed *notabilis*.

A priori one might assume that the breeding birds known to occur in interior British Columbia would be of the same sort, that is, *notabilis*. Swarth (Univ. Calif. Publ. Zool., 24, 1922, p. 292) already has suggested that this is not the case. Material recently taken in the loop of the upper Frazer River, in the Itcha Mountains (by Mr. Racey), and in the Bella Coola Valley, proves that birds from the central section of the Province, from the Rockies to the sea, develop different characters and different combinations of characters from those encountered elsewhere in the range of the species.

The backs of this central British Columbian group (9 spring plumages; 5 fresh plumages) are still more neutral in hue than the Alaskan birds, but instead of being paler they are darker in tone than even the eastern birds. The result is a color between olivaceous black and dark grayish olive, becoming more neutral and sooty in extreme wear because of the greater exposure of the especially dark central parts of the feathers. Birds of this sort may have entered into the formulation of Ridgway's description (*loc. cit.*), which was not the original description and which may have been a composite picture, since "grayish sooty" was his characterization of the back. Beneath, these birds are intermediate as a series between Alaskan and Atlantic groups. They do not attain the mass effect of yellow of *S. n. noveboracensis*, yet none reaches the extreme paleness of certain *notabilis*. Thus, as a group, the underparts compare closely with the Mackenzie-Lake Athabasca series. The size is the least of any population thus far discussed (fig. 43D). They segregate in this regard from *notabilis* much better than do eastern and mid-western series. In one dimension, that of tarsus, they are as large as *notabilis*. To summarize, the British Columbia race surpasses *notabilis* in neutrality of color above, and surpasses *noveboracensis* in darkness of tone; in yellow beneath it is intermediate; in size, with the exception of the tarsus, it is the smallest of the species.

Eight specimens from the northern half of British Columbia (Skeena to Dease River) constitute a group which is identical in size and ventral coloration with the central British Columbian series. However, they do not show the extremes

of sooty neutral dorsum. Most could not be separated individually from the population farther south. It appears that diminution of the dorsal coloration occurs to the northward, but the resemblance is still closest to the birds immediately to the southward rather than to *notabilis* or *noveboracensis*.

The problem remains whether there is a continuous breeding range of *notabilis* from Montana to Alaska. It seems at present uncertain that there is. Since the Athabasca and Mackenzie birds are not true *notabilis* and since a different race occupies British Columbia between the Rockies and the coast range, the only chance for continuity is along the east face of the Rocky Mountains. It is a little difficult to believe that such a connectant strip would exist uninfluenced by the dark British Columbian bird on the west flank of the continental divide. As far as present evidence indicates, *notabilis* exists as two separate breeding colonies.

Inasmuch as the geographic variation has been shown to include three distinct groupings of characters it is certainly misleading to use only two subspecific names. Either three subspecific names or none should be employed to suggest conditions known to exist. In using three names it must be emphasized that they can only be applied rightly to representatives of the three areas of differentiation where characters are well segregated and developed to an extreme. We should be reconciled to leave unsettled as to trinomial a vast intermediate population, too unstable for separate recognition as a fourth group, and yet probably as large as any of the definable races. Perhaps one plan of action would be that used in some botanical classifications of designating these non-differentiated individuals by a binomial only, *Seiurus noveboracensis*. Only populations set off by a distinct segregation of characters would bear a third, varietal or subspecific name. To completely abandon simple binomial designations for uniform trinomial treatment in species exhibiting geographic variation has sacrificed a flexibility which a mixed binomial and trinomial usage would give and which might be very serviceable in expressing certain types of geographic variation. Regardless of the manner in which names are to be used, it is necessary to have available, as of equal value with *notabilis*, a name for the bird of British Columbia.

Seiurus noveboracensis limnaeus, subsp. nov.

British Columbia Water-thrush

Type.—Male, no. 62881, Mus. Vert. Zool.; Indianpoint Lake, Cariboo District, British Columbia; June 8, 1930; collected by T. T. and E. B. McCabe; orig. no. 520.

Measurements of type.—Wing, 73.31 mm.; tail, 54.35; tarsus, 20.12; middle toe, 12.61; bill, from nostril, 9.97.

Diagnosis.—Summarized from foregoing discussion: dorsum between olivaceus black and dark grayish olive; underparts with yellowish averaging less than in *S. n. noveboracensis* but more than in *S. n. notabilis*; wing and tail averaging small; tarsus as in *notabilis*.

Distribution of breeding population.—Area of differentiation, central interior British Columbia extending with some diminution of characters through northern British Columbia.

In examining wintering birds or those taken in migration far from the breeding area we have been able to match a fair proportion with one or another of the three races. These alone are listed below to indicate something of winter distribution of the extreme types. The equivocal winter-taken specimens are best left without name as an arbitrary or doubtful assignment of race might lead to erroneous concepts of wintering ranges.

IDENTIFICATIONS OF CERTAIN WINTERING AND MIGRANT INDIVIDUALS

		S. n. noveboracensis	
32762 Calif. Acad. Sci.	male	Dec. 26, 1929	Bariles, Chiriqui, Panama
X3317 Mailliard coll.	male	.....	Alajuila, Costa Rica
		S. n. notabilis	
86269 U. S. Nat. Mus.	female	Feb. 24, 1882	La Paz, Lower Calif.
196892 U. S. Nat. Mus.	female	Feb. 17, 1906	La Paz, Lower Calif.
86268 U. S. Nat. Mus.	female	Feb. 6, 1882	La Paz, Lower Calif.
185930 U. S. Nat. Mus.	female	Apr. 20, 1903	Guerrero, Mexico
196890 U. S. Nat. Mus.	male	Feb. 8, 1906	Espiritu Santo Island, Lower Calif.
90074 U. S. Nat. Mus.	?	Mar. 14, 1883	San Pedro, Lower Calif.
55864 Mus. Vert. Zool.	female	Apr. 3, 1929	San Jose del Cabo, Lower Calif.
58861 Mus. Vert. Zool.	female	Dec. 22, 1928	La Paz, Lower Calif.
130377 U. S. Nat. Mus.	female	Sept. 4, 1892	San Bern. R., Mex. Boundary Surv.
130375 U. S. Nat. Mus.	male	Sept. 4, 1892	San Bern. R., Mex. Boundary Surv.
130374 U. S. Nat. Mus.	female	Sept. 4, 1892	San Bern. R., Mex. Boundary Surv.
235897 U. S. Nat. Mus.	male	Sept. 12, 1886	Fort Verde, Ariz.
235898 U. S. Nat. Mus.	female	May 11, 1887	Fort Verde, Ariz.
		S. n. limnaeus	
32761 Calif. Acad. Sci.	male	Nov. 10, 1929	Puerto Armuelles, Panama
55863 Mus. Vert. Zool.	male	Feb. 17, 1929	La Paz, Lower Calif.
55859 Mus. Vert. Zool.	female	Dec. 2, 1928	La Paz, Lower Calif.
59791 Mus. Vert. Zool.	female	Apr. 30, 1931	San Jorge, Lower Calif.
32 Reed Ferris coll.	male	Aug. 26, 1931	Beaver, Oregon
37720 Mus. Vert. Zool.	female	Aug. 16, 1905	San Bernardino Mts., Calif.
106062 U. S. Nat. Mus.	female	Sept. 25, 1885	Santa Cruz, Calif.

Museum of Vertebrate Zoology, Berkeley, California, June 9, 1933.

FROM FIELD AND STUDY

Magpie Spends Winter at Florence Lake.—It was in October of 1931 that I saw, for the first time, an American Magpie (*Pica pica hudsonia*). For three days a bird stayed in a grove of trees just back of our home, here at Florence Lake, Big Creek, California. Often during the spring and autumn months I see birds that one does not expect to see in this vicinity. I list them as "migrants", for future reference, but do not become unduly excited over their visits. So, when this same fellow, or another of its kind, appeared on October 1, 1932, it never occurred to me that it would remain for any length of time. But all during that month I would no more than write down, "date last seen," than the bird would reappear. During the latter part of October and fore part of November there was a period of about two weeks that we did not see the magpie at all. Some of its longer tail feathers were missing so that we were able to know it was the same individual that was here, off and on.

At this time our coyotes, that had become partially tame the previous winter, began coming irregularly for our hand-outs. By the middle of November they again came daily. And with them came Skäta (Swedish for magpie). The moment the "pups" came running in response to our call, Skäta came winging from the same direction. As we tossed the food, the bird would land near and try to pick it up before the coyotes reached it.

Sometimes Skäta succeeded and it was amusing to watch the bird doing its best to fly with a piece that was all but too large for it to handle. Often the piece of food proved too unwieldy and before the bird could again pick it up one of the pups would grab it. Other times Skäta managed to flounder with the food to a tree, there to eat in peace.

All winter it was nip and tuck between the coyotes and the magpie. If the former were the winners, Skäta would follow one or the other to their favorite feeding spots. There the bird would alight on the snow a few feet away and await its chance to make a dash for a bite. More often it followed Tom and frequently was less than a foot from this coyote's nose.

None of the coyotes offered to harm the magpie, though Dick and Nelly would chase it away if it came too close, while Tom did not seem to mind in the least sharing his food with his feathered friend.

Incidentally, after observing our coyotes these two years, we have serious doubts that they are enemies, to any great extent, of bird life. Our nutcrackers, Blue-fronted Jays, juncos, Brewer and Red-winged blackbirds settle on the coyotes' feeding ground to pick up crumbs. Not yet has a coyote shown the least intention or desire of killing them. The birds feed all about and among them quite unconcernedly. Surely coyotes never had a better chance to dine off birds than ours have on their feeding ground here. I am sure a dog would be more apt to harm the birds if they attempted to take its food away.

For some reason or other the magpie preferred dining with the coyotes rather than its own feathered folk. The bird tables and suet posts, provided with about the same kind of food given pups, are on the opposite side of the house from the space where we have trained the coyotes to come for their food. The coyotes never come to the birds' side. Less than a dozen times did Skäta come there for food, and then only on the mornings when it was storming so hard that the pups did not move about.

When the coyotes finished and went off over the hill, Skäta would fly after them. We wondered if the bird also got a share of the natural food which they obtained.

March third we saw the magpie for the last time and we feel certain that it then returned to its true home. Because of its being near the house when the coyotes were, we were unable to trap and band it.—LILA M. LOFBERG, *Florence Lake, Big Creek, California, April 20, 1933.*

Records of some Birds New to the Mexican State of Sonora.—In 1931 Mr. J. T. Wright made a small collection of about three hundred skins while traveling through Sonora, most of which were later purchased by Dr. L. B. Bishop, although a few were otherwise disposed of. The present writer worked at several mainland points between Guaymas and Tepopa Bay in late December, 1931, and early January, 1932, and finally Mr. Chester Lamb took a few specimens in the central part of the state in the winter of 1932-1933. These collections contain many valuable data on distribution and have

helped materially in outlining the ranges of several species and subspecies. In addition, thirteen species were collected or noted which have heretofore escaped notice, at least so far as published records are concerned. An annotated list of these is given below.

It may be of interest to mention that at present the list of Sonora birds, based on published data available to me, stands at 457 species and subspecies, though some of the records are obviously impossible and others are varyingly unsatisfactory. Besides the above there are numerous others which have been collected but never reported upon and which are not available for use at this time. In this connection I wish to thank Dr. Bishop for placing, unsolicited, all of his specimens at my disposal.

Puffinus opisthomelas. About a dozen Black-vented Shearwaters were noted singly on the afternoon of December 26, 1931, as we were sailing up the coast from San Pedro Nolasco Island to Kino Bay. Most of these crossed the bow at a range close enough to be sure of their identity. It is probable that several of the species of shearwaters which occur off the California coast will sooner or later be detected in the Gulf; indeed two species other than the Black-vented were seen by us on the above date, though at such range that their identity could only be surmised.

Pelecanus erythrorhynchos. A single White Pelican was seen at Tepopa Bay on January 2, 1932. Mr. A. W. Anthony tells me that he saw a flock of forty-two at El Golfo on November 24, and that the species was "common" at Estrada de Tasiola on December 4, 1930.

Casmerodius albus egretta. American Egrets were noted personally in Guaymas Harbor, December 23, 1931, and at Tepopa Bay on January 2, 1932. Lamb saw a flock of ten on the Rio Sonora near Hermosillo on December 27, 1932.

Hydranassa tricolor ruficollis. Several Louisiana Herons were seen on the tide flats in front of the hotel in Guaymas on December 23, 1931.

Nyctanassa violacea bancrofti. Yellow-crowned Night Herons were common in the growth bordering tidal lagoons at Tepopa Bay where, on January 2, 1932, they were flocking with other herons such as *Egretta thula brewsteri* and *Dichromanassa rufescens dickeyi.* The single specimen taken is typical of this race.

Guara alba. White Ibises were not uncommon at Tepopa Bay on January 2, 1932.

Dendrocygna autumnalis autumnalis. Two Black-bellied Tree-ducks in the Bishop collection were taken by Wright at Camoa on June 3, 1931.

Nyroca americana. Lamb noted a single Redhead on a small rainwater pond at San Jose de Guaymas on January 13, 1933.

Numenius americanus americanus. Long-billed Curlews were present in small numbers at San Carlos, Kino and Tepopa bays between the dates of December 24, 1931, and January 2, 1932. Lamb notes a flock feeding on the plain near Querobabi on December 6, 1932, and also mentions the species as at San Jose de Guaymas on January 19, 1933. While there is every probability that both forms of the Long-billed Curlew occur in Sonora, the only specimen taken (Kino Bay, December 27, 1931) is an extreme of the typical race.

Phalaropus fulicarius. On December 26, 1931, small flocks of Red Phalaropes were noted at frequent intervals along the coast from San Pedro Nolasco Island to Kino Bay. Some of the birds remained on the water until almost touched by the bow of our boat and hence identification was reasonably certain.

Larus glaucescens. Among a group of gulls working over some fish remains on the beach at San Pedro Bay on December 25, 1931, was a single adult Glaucous-winged Gull. Although known to be a fairly common winter visitant on the Lower California side of the Gulf, the present instance appears to be the first recorded occurrence for the Sonora side.

Larus occidentalis wymani. An adult Wyman Gull was seen at San Pedro Bay on December 25, 1931. This bird was on the beach shingle in company with a dozen or more Yellow-footed Gulls and was under observation for nearly an hour at distances as close as six feet. Unfortunately I had expended all ammunition and had no means of collecting the bird, but since the only means of distinguishing adult *wymani* from adult *livens* is the color of the legs and feet in life there is no reason to question the identification.

Seiurus motacilla. Wright took a single Louisiana Water-thrush at Guirocoba on March 23, 1931. This appears to be not only the first record for Sonora but the

second for the Pacific coast of North America. The specimen is now number 48238 of the Bishop collection.—A. J. VAN ROSSEM, *California Institute of Technology, Pasadena, California, May 2, 1933.*

Behavior of Birds during the Long Beach Earthquake, March 10, 1933.—The first shock, and the only really severe one, came at approximately 5:55 p. m. Minor shocks followed at such short intervals for twenty hours that it seemed to me as if the earth was in continual motion. Although it was about sunset at the time of the first shock, and not yet dark, a flock of a hundred Brewer Blackbirds (*Euphagus cyanocephalus*) had retired to their roost in some nearby medium-height trees. While we felt no preliminary shocks, these birds became uneasy just before the severe shock. During the shock, the birds began leaving the roost, rising slowly into the air above the trees, and milling about uncertainly in twenty-foot ascending spirals. The first severe shock lasted about eleven seconds, but the blackbirds continued to rise for about ten seconds longer. Then, they had reached the height of about one hundred feet above the trees, and perhaps one hundred and forty feet above the ground. From that elevation they descended slowly to their roost, and settled rather noisily. During the minor shocks that came all night long, there was no noticeable disturbance, either among these birds or among other birds in my neighborhood. Apparently all birds remained asleep, or at least quietly on their roosts, or in their usual sleeping places. At the usual time near dawn, meadowlarks and mockingbirds began to sing. They kept up their morning songs in spite of the tremors that were occurring practically every minute.—M. P. SKINNER, *1316 Harding St., Long Beach, California, April 24, 1933.*

Relationships of Coues and Olive-sided Flycatchers.—In the fourth edition of the A. O. U. Check-list, as in the third, the Olive-sided Flycatcher occupies the monotypic genus *Nuttallornis*, while Coues Flycatcher and the several wood pewees are placed together in *Myiochanes*. At an earlier date they were all together in the one genus *Contopus*. In the *Auk* for October, 1899 (XVI, pp. 330-337), Dr. H. C. Oberholser published "A synopsis of the genus Contopus and its Allies," in which he proposed an arrangement essentially similar to the one now in use, the Olive-sided Flycatcher in the genus *Nuttallornis*, the others in *Horizopus*. It was, I suppose, Ridgway's procedure in his "Birds of North and Middle America" (IV, 1907, pp. 509-529) that inaugurated the substitution of *Myiochanes* for *Horizopus*.

It is stated by Oberholser that "*Nuttallornis* Ridgway, proposed in subgeneric sense for *Contopus borealis*, is, by reason of very pronounced characters, without doubt of generic rank." These characters (which I do not dispute) are given as follows: "Resembling *Horizopus*, but tarsi shorter than middle toe with claw; wing exceeding tail by about one-half the length of latter; rictal bristles less developed (actually as well as comparatively shorter than in *Horizopus virens*); first primary longer than the fourth." Ridgway (*op. cit.*, p. 504) characterizes *Nuttallornis* as: "With tail only one-third as long as wing, tarsus only one-seventh as long as wing and decidedly shorter than middle toe with claw, and with a conspicuous patch of white silky feathers on each side of rump." *Myiochanes* (pp. 509-510) is characterized in minute detail but mostly in comparison with *Blacicus*. *Nuttallornis*, obviously, is dismissed as clearly distinct without question.

The Olive-sided Flycatcher is a common bird over much of North America. Most observers are in some measure familiar with it, if not on the breeding grounds at least as a migrant. Coues Flycatcher is of more southern distribution, extending northward in summer only as far as the mountains of Arizona and New Mexico, and relatively few American ornithologists have seen the living bird. I think that I would be safe in asking those few if they did not agree with me that the Olive-sided Flycatcher and Coues Flycatcher, like "the Colonel's lady and Judy O'Grady," are sisters under their skins. Every action proclaims the close relation of the two and their similar un-likeness to the wood pewees. The clear, ringing note of the Olive-sided Flycatcher ("Give *me* beer," it has been rendered) is slightly varied in Coues Flycatcher (the Mexicans call the bird "José Maria"); the intonation is exactly the same. Both habitually perch on towering tree tops,

they nest in similar situations, usually at the end of a spreading limb high in a tall conifer, and details of nest structure and eggs are closely similar. It will be noted, too, that in their geographical distribution they are complementary, the Olive-sided northern, Coues Flycatcher southern, but both of the Transition zone or higher.

Most of the minor structural peculiarities of *Nuttallornis borealis* may be conceded, though it should be pointed out that that species and Coues Flycatcher are of similarly large size as compared with the small wood pewees, and that the tufts of silky white feathers upon the thighs of the Olive-sided are also present in Coues Flycatcher. My contention is that the characteristics of habits, actions and call notes that are common to both species, and peculiar to them, are sufficiently indicative of close relationship to outweigh the differences in structure. I should say that without question the Olive-sided and Coues Flycatchers are northern and southern representatives of one group, the wood pewees in another group, and I would divide the genera accordingly. Whether this involves any nomenclatural changes beyond shifting the forms of *pertinax* into the genus *Nuttallornis* I leave to others who have knowledge of the South American species that might be affected.

Dr. Oberholser has recently suggested generic separation of Coues Flycatcher (*Myiochanes*) and the wood pewees (*Horizopus*) (Sci. Publ. Cleveland Mus. Nat. Hist., 1, 1930, p. 91), which brings up the subject of monotypic genera. This has been discussed at length recently and need not detain us now. Obviously there are some species taxonomically isolated so as to require such systematic treatment, but, just as clearly, it seems to me if separate genera are erected for a large proportion of species and merely to indicate differences, we arrive at a needless duplication of terms that is the reverse of helpful. Generic grouping should indicate resembances. The question I wish to raise here concerns the proper basis for such grouping.

Recently, upon the Galapagos Islands, I was happily able to make first-hand observations on living representatives of that remarkable avifauna. I was impressed with the way in which certain family traits—habits and mannerisms apparently useless in themselves—had persisted in some species, surviving unchanged although the bird itself had altered so as to be accorded specific or generic distinction from its mainland relatives.

On the other hand, as an example of the kind of structural differences that are often used in classification, consider the following, extracted from Ridgway's long, detailed, and unquestionably accurate definition of *Myiochanes*: "Wing-tip longer (the longest primaries exceeding secondaries by at least combined length of tarsus and half the middle toe, usually by more than tarsus and whole middle toe)." Such criteria may be useful in the skilfully constructed "key" to species or genera with which we are all familiar, and they may be tolerated in studies that, through lack of field observations, are necessarily restricted to prepared specimens, but they should not weigh heavily against the sort of evidence I have cited as obtainable from the living bird. I could not concede that they indicated "without doubt generic rank" if the bird itself said otherwise.—H. S. SWARTH, *California Academy of Sciences, San Francisco, May 1, 1933.*

Further Notes on the Birds of Big Bear Valley, San Bernardino Mountains, California.—The writer spent the time from June 20 to September 10, 1932, at Big Bear Valley, and the following observations of interest were noted:

On July 12, a pair of Spotted Sandpipers (*Actitis macularia*) with four small young was found in the grass and weeds on the edge of a little bay near Windy Point on the south shore of Big Bear Lake. When disturbed, both adults were noisy as they flew about the locality where the young were hidden. The young were near the water's edge and they took readily to the water, where they were able to swim about like small ducks. The day following, which was cold and windy, I flushed one of the adults from the weeds in the same locality, where it seemed to be brooding two of the little ones. This seems to be the first breeding record for this species in Big Bear Valley. Another pair of these birds was noted several times at the east end of Bear Lake and by their actions I thought that they had young, though I was unable to locate them.

On August 5, 1932, a beautiful adult Bald Eagle (*Haliaeetus leucocephalus*) flew over me on the north shore. This is rather an uncommon bird for this locality, though one or two migrating individuals are usually seen every August.

Another new bird for Big Bear Valley was seen on August 6, when a Mockingbird, presumably of the western race (*Mimus polyglottos leucopterus*), was flushed from some small junipers near the main highway on the north side of the lake near the Ranger Station.

I should also like to record the nesting of the Ruddy Duck (*Erismatura jamaicensis*) on Baldwin Lake. About a dozen pairs were seen there during early July, and by the latter part of that month small young were seen with their parents, swimming near the tules at both the northwest and south ends of the lake. Last year (1931) this lake was nearly dry, but this year it held considerable water and the usual birds found nesting were present again, Ruddy Ducks, American Coots, American Eared Grebes, and Yellow-headed Blackbirds.—WRIGHT M. PIERCE, *Claremont, California, September 15, 1932.*

The California Spotted Owl in Yosemite Valley, California.—The outstanding adventure of the month for me and for Mrs. Michael was a visit with a pair of Spotted Owls (*Strix occidentalis occidentalis*). We were wandering through a cool wood on the south side of the valley about a mile below the old Yosemite Village. It was two o'clock in the afternoon of April 23, 1933, the day was overcast, with the sun occasionally gathering strength enough to cast a shadow. Hermit and Calaveras warblers were singing and we made squeaking sounds to attract their attention.

In response to our squeakings there came what we took to be the barking of a dog. Seemingly the dog was about a quarter of a mile away, but the sound of his barking came distinctly to our ears. In answer to the barkings there came close at hand the unmistakable hootings of an owl, remindful of Horned Owl hootings, yet slightly different, perhaps shorter and not so melodious. As a matter of fact we did not get a clear ear-picture of the sounds, for just at the time of the hootings we caught sight of the owl.

In the filtered forest light this owl looked as big as a turkey. It was a round-faced owl without ear tufts. Its very deep set eyes appeared as dying coals that were turning black, but still had a touch of fire. When the coals went dead a ghostly bird appeared to gaze from empty eye sockets. Those deep-set unearthly eyes were the fascinating feature of the bird; they gave to its face a weird, mysterious, spectral look. Over the eyes were grey eyebrows, then a brown area, and then high on the forehead were heavy dark eyebrows as though the bird wore heavy horn-rimmed spectacles. The hooked bill, sort of tucked in the feathers, was a greenish horn color. The feathers of the crown were a rich brown flecked with white and appeared smoothly brushed back over the round head. Over the shoulders hung a rich brown cape, all neatly flecked with round white markings. Below the shoulder cape there hung a second cape, of the same pattern, which appeared to drape loosely to the banded tail. The breast of the owl was buffy, much lighter than the back, but also flecked with white. The belly was of lighter color than the breast.

While we watched the owl from a distance of fifty feet it uttered soft pitched, whispered, *oowa* notes. When it turned its face directly away from us and sounded these soft notes they seemed to come from a far distance. These notes were answered by a second bird who spoke in owl fashion with a *who—whoo-whoo—whooo.* It was this call that reminded us so much of the Horned Owl. There was also from the second bird a weird jumble of notes, all ventriloquially uttered which suggested to me chatter of several monkeys gathered together to exchange gossip.

After looking us over for a minute or two our owl friend lost interest and as she settled on her perch she appeared to shrink and now we thought her possibly a size smaller than the Horned Owl. After ten, or possibly fifteen minutes, our first owl took wing and although only fifty feet away no sound came to us from her wings. She slipped away through the wood, we thought for a short flight.

Now we went looking for the second bird. A hundred feet up the slope and we caught sight of him. We thought of him as the male bird because of his heavy voice, and because he was the bird that did the barking. This bird was perched on the branch of a chrysolepis oak about twenty feet above the ground, and behind him hung a dead branch that was heavily draped with brown leaves—a background that beautifully camouflaged this brown bird with the white fleckings. This bird was marked like owl number one, but of a darker shade of brown and his upper eyebrows were almost black. This bird appeared not the least concerned with our presence and we finally walked right under his perch. On the ground under his perching tree were a number of old pellets. Here we got a big surprise, for scattered through every pellet examined were a number of muskmelon seeds. Other identified particles contained in the pellets were egg shells, apparently hen's egg shells, hair from a ground squirrel, small mammal bones, and other bones that looked like bits of bone from a pork or mutton chop. As the owl flies, it is just about a half mile to the bear feeding platforms where owls could get such things as egg shells, melon seeds and mutton chops.

On our way down the slope we again located owl number one. Now she was perched in a chrysolepis oak and she also had a heavy background of foliage formed by a hanging branch. We walked up to within fifteen feet of her. She did not seem to mind us at all and went on with her preening. As she rolled her round head about to comb her feathers with her bill she looked almost human, but then she stretched one of her great wings, and we knew that she was not human, albeit, in spite of her wings, she did not look exactly angelic.

In other years when we camped in a wood on the river-bank we were often serenaded at night by a pair of Spotted Owls, but only once before had we seen one of these rare owls in the broad light of day.—CHARLES W. MICHAEL, *Yosemite, California, May 27, 1933.*

Water-thrush in Altadena, California.—On May 15, 1933, about 2:30 p. m., at an abandoned artificial lily-pond, sunk in a dry gully near my house, I saw a small, olive-brown bird with black and white-streaked underparts, tilting up and down as it picked its way over the mud and débris. I was sure that I recognized it, as I am familiar with the species in Massachusetts. I went home, got my field glasses, and was able to observe for several hours, sometimes at a distance of not over six feet, a Water-thrush (*Seiurus noveboracensis*).

This little warbler walked over the muck and floating boards in the stagnant pool, and while I watched, picked out several white grubs from under bits of wood and leaves, and often darted into the air for insects on the wing.

The bird was at the pool until dark on the 15th, but has not returned as far as I have observed. I was able, however, to make several sketches of it in pencil and color, and there can be no doubt as to its identification. The tail was flirted up and down constantly. The bird showed remarkably little shyness and fed over the murky pool within a few feet of me. When frightened by a quick movement of my hand, it flew up to the branches of an overhanging sycamore, returning presently to the feeding ground of the pool.—JACOB B. ABBOTT, *Altadena, California, May 20, 1933.*

The Vaux Swift at Whittier, California.—On the evening of May 12, 1933, large numbers of Vaux Swifts (*Chaetura vauxi*) were noticed circling around the barns of Mr. John Gregg near Whittier. As night came on they began flying into a hay loft where they would cling to the walls and to each other. At places they would cover large sections of the wall five or six deep. It was estimated that at least three thousand swifts found shelter in the barn that night.

Next morning the birds began leaving the barn at about eight o'clock. They would fly out, a few at a time, circle around a while and then fly off in groups. They returned again the next two nights in about the same numbers, and for the two nights following these the numbers decreased rapidly, and on the sixth night they failed to return. The birds were heavily parasitized with lice and seemed weak and emaciated. A dozen or more were found dead each morning during the period they were taking refuge in the barn.

Since there was considerable snow in the mountains when the swifts were staying over, it is assumed that the unfavorable weather barrier caused them to accumulate here until warmer days and better feeding conditions called them farther north.—S. A. WATSON, *Whittier College, Whittier, California, May 24, 1933.*

Some Subsistence Items of Western Burrowing Owls.—Some interesting items of food found in a few nesting cavities used by Western Burrowing Owls (*Speotyto cunicularia hypugaea*) excavated near Benicia, California, by H. W. Carriger, William Douglas and the writer on April 23, 1933, were the following. A male Black-headed Grosbeak (*Hedymeles melanocephalus*) in full spring plumage, a San Joaquin Valley Pocket Mouse (*Perognathus inornatus*) identified by Dr. Seth B. Benson of the Museum of Vertebrate Zoology at Berkeley, a meadow mouse (*Microtus*), a small frog and a large blue centipede. In addition, there were the segments of Jerusalem Crickets (Stenopelmatus) and black ground beetles nearly always found about the entrances and in the cavities of this owl.—EMERSON A. STONER, *Benicia, California, May 28, 1933.*

European Widgeon Recorded from Lower California.—The San Diego Society of Natural History has come into possession of a mounted male European Widgeon (*Mareca penelope*) taken on January 13, 1933, at Descanso, Lower California, Mexico, which is about 30 miles south of the international border.

It appears that Alfred Crosthwaite, who lives at a small rancheria at Descanso shot "a pair" of these birds in a slough close to the ocean. One he sold for food at Tijuana; the other, in the belief that it was a "cross," he brought to show his friend W. Y. Wetzel, an employee of Muehleisen & Company, sporting goods house in San Diego. Wetzel had the bird mounted by Ted Huff, San Diego taxidermist, for Muehleisen's exhibit of game birds. Due to the generosity of all these persons, the specimen has now been donated to the San Diego Society of Natural History and will be placed on exhibition at the Society's museum in the case devoted to local ducks. It constitutes, I believe, a first record for Lower California.—CLINTON G. ABBOTT, *San Diego Society of Natural History, Balboa Park, San Diego, California, June 5, 1933.*

Electrocution of Purple Martins.—During the latter part of May and the first part of June, 1933, hundreds of Purple Martins (*Progne subis subis*) gathered every night upon the electric wires near Bingham's pond, an irrigation reservoir about one-fifth of a mile in length, six miles northeast of Tucson, Arizona. On the evening of May 31, I estimated the number at 1500. One span of bare 2300 volt wires is rather long and in the center the separation can hardly be more than eight or ten inches. Below this point I found a dead male Purple Martin and wing feathers of several more.

I was puzzled to account for these deaths until, on the morning of June 3, the matter was solved. A female martin was found hanging head downward, its claws grasping the wire tightly. Evidently when the wires were crowded with birds, the wind or the movement of the birds as they sometimes left in large groups, was sufficient to swing the wires dangerously close together. The moment two birds on different wires touched they would, of course, be electrocuted. Stray cats probably accounted for the feathers on the ground.—A. H. ANDERSON, *Tucson, Arizona, June 5, 1933.*

White Mountain Fox Sparrow in Arizona.—Records of *Passerella* from Arizona are somewhat scanty, and but four records of a single form were included in Swarth's Distributional List of the birds of that State published in 1914. It is therefore a matter of interest that a specimen taken 53 years ago by the veteran collector, Frank Stephens, has hitherto remained unrecorded. The specimen is no. 1149, collection of the San Diego Society of Natural History, and was taken at Big Sandy Creek, Mojave County, Arizona, February 9, 1880, by F. Stephens. This bird, now considerably faded by age, was submitted to Mr. H. S. Swarth, who identified it as *Passerella iliaca canescens.*—LAURENCE M. HUEY, *San Diego Society of Natural History, Balboa Park, San Diego, California, June 8, 1933.*

House Finch Parasitized by Dwarf Cowbird and Black Phoebe Nests Occupied by House Finch.—Since I first found the Dwarf Cowbird (*Molothrus ater obscurus*) in the San Bernardino Valley, California, in 1918, it has increased to such an extent that most of the small birds have been parasitized. One of our most common breeding birds is the House Finch (*Carpodacus mexicanus frontalis*) and yet among the numerous nests, that I have examined in suitable locations, there has been but a single victim of the Dwarf Cowbird. Rex Parker called my attention on May 15, 1933, to a nest in East Colton containing three eggs of the House Finch and one of the Dwarf Cowbird. The eggs showed no signs of incubation, two of the finch eggs had holes in them, the other two eggs were addled, and the nest deserted.

The House Finch is considered by some people to be a pest and it is gratifying to find that they do not readily contribute to the support of the Dwarf Cowbird. However, with this word of praise I will give a couple of incidents which are not so good.

In April, 1931, I found a nest of the Black Phoebe (*Sayornis nigricans*) under a bridge about twenty-five miles northwest of San Bernardino, California. On May 3 of that year I again visited the nest and was surprised to flush a House Finch from the nest which then contained one egg of the phoebe and four of the finch. On this latter date the phoebe was at work on another nest a few feet away. On May 28, 1933, I visited the same bridge and found a new nest of the phoebe containing large young of the finch and within five feet a later nest of the phoebe with four of the rightful owner's eggs.—WILSON C. HANNA, *Colton, California, May 30, 1933.*

The Black Vulture in Arizona.—The first record known to the undersigned of the occurrence of the Black Vulture (*Coragyps atratus atratus*) in Arizona is that of Cooke (Auk, XXXI, 1914, p. 403), who reported "Several seen, May 1890, by Dr. A. K. Fisher in the Tonto Basin." H. H. Kimball (CONDOR, XXV, 1923, p. 109) surprised a number of vultures from the bottom of an old ditch along the Santa Cruz River, 12 miles south of Tucson, Arizona, on May 7, 1922. At least a dozen of these were Black Vultures, he states. On November 28, 1928, Miller, Taylor and Swarth (CONDOR, XXXI, 1929, p. 76) saw 15 or 20 Black Vultures in air at one time, circling about together with a few Turkey Vultures. The locality was just south of Tucson, where a number of the Black Vultures were startled from the ground in the vicinity of a small slaughter-house.

The undersigned have noted Black Vultures at intervals over several years in the general vicinity of Tucson. On April 20, 1928, a dozen were observed feeding on discarded offal just south of the city. On January 22, 1931, Chas. R. Reynard and Taylor, returning to Tucson from the Santa Rita Experimental Range, about 5:20 p.m., saw first a flock of eleven individuals and later one of three, flying due west, about 16 miles south of the city. In the same general locality, on November 28, 1932, five Black Vultures were observed circling and flying high in air about 10 a.m. The following month, on December 18, 1932, a flock of fourteen circled overhead in the vicinity of the San Xavier crossing of the Santa Cruz at about 2 p.m. The flock held together fairly well for some time, circling and wheeling, slowly moving from the general vicinity of the San Xavier Mission southeasterly toward the new Indian Service Hospital. Later they scattered out over the Santa Cruz bottoms. On March 11, 1933, one was recorded by Vorhies northeast of Tucson.

On March 21, a flock of about thirty Black Vultures was noted near Sells (Indian Oasis), about 60 miles west of Tucson on the Papago Indian Reservation. The Vultures were congregated about a dead cow at a small earthen reservoir or tank, a mile east of Sells. A couple of these birds were collected by Vorhies, so far as known the first actual specimens taken within Arizona. One of these specimens is on deposit at the University of Arizona, the other in the United States Biological Survey. Additional birds were seen by D. M. Gorsuch in the same locality the week of April 10-14; and an old Indian chief, a former Government employee named Hugh Norris, reported Black Vultures had appeared in the vicinity only in recent years.

A. A. Nichol has observed Black Vultures at intervals in winter north to the Tucson-Ajo highway, west to the Robles Ranch and Sasabe road, and south along the Santa Cruz valley (in which Tucson is located).

These various observations suggest that in recent years Black Vultures have been appearing in increasing numbers in southern Arizona. Their present known status in the State may be outlined as follows: Regular winter visitant at least from November to May, in Lower Sonoran zone north to Tucson, east to Santa Cruz Valley, and west to Sells (Indian Oasis).

The Black Vulture is easily told from the Turkey Vulture. If seen close at hand its head is blackish (covered with small pin-feathers) instead of red. In flight, while it is distinctly buzzard-like, it appears stockier than the Turkey Vulture, with shorter, square tail, and shorter, broader wings. (See Coues, Key, 2, 1903, p. 705.) The front of the wings is straighter in the Black Vulture, more curved in the Turkey Vulture. The ends of the wings show separate feathers in the Turkey Vulture, but not in the Black Vulture. An area on the terminal third of the wings of the Black Vulture appears white beneath in flight. The posterior portion of the wing in the Turkey Vulture is also paler than the rest, but does not show up white in flight. The Black Vulture's manner of flight is in contrast with the Turkey Vulture. While the latter soars a great deal with occasional slow wing beat, the Black Vulture flaps its wings with a quicker beat at intervals while soaring. Some we watched flapped their wings from six to nine times, usually about seven, then soared for a distance.—WALTER P. TAYLOR and CHARLES T. VORHIES, *Tucson, Arizona, April 19, 1933.*

A Skeleton of the Guadeloupe Caracara.—When Mr. Clinton G. Abbott wrote to the National Museum in 1928 asking regarding our series of the Guadeloupe Caracara it was our understanding that he was trying to trace the origin of the specimens in the San Diego Museum, so that in our reply no mention was made of a skeleton of this rare bird in our collection. As this may be the only specimen of its kind extant it seems proper to place it on record in connection with Mr. Abbott's interesting account in the CONDOR for January, 1933.

The skeleton in question was presented by Dr. F. A. Lucas on December 26, 1906, when he was Curator-in-Chief of the Museum of the Brooklyn Institute of Arts and Sciences. On the date in question Dr. Lucas wrote to Dr. Frederick W. True, Head Curator of the Department of Biology in the National Museum, "I see by a recent note in the 'Auk' that Guadeloupe Island Caracara, *Polyborus lutosus*, if not exterminated, has become extremely rare. This being the case, I am sending to your Department a skeleton of this bird which I have had for many years and is probably the only skeleton in existence. Such being the case, I feel that it would best be in the National Museum and take pleasure in presenting it. The data accompany the box which will go to you in a day or two." The specimen was accessioned on January 2, and catalogued January 8, 1907.

There are two data slips in Dr. Lucas' characteristic handwriting accompanying the skeleton, one reading "*Polyborus lutosus* Ridg. Guadeloupe Island Coast of California Species now extinct, or very rare." The other is inscribed "Skeleton received from Dr. C. Hart Merriam Collected by W. E. Bryant." A National Museum label in the box bears the catalog no. 19916 and another number 178.

Dr. Merriam informs me that he recalls the specimen which he obtained from W. E. Bryant as indicated, and suggested that I look it up in his osteological catalog which we have in our files. There is no record of it there, however, so that it seems probable that it was given to Dr. Lucas, at that time in Washington and working enthusiastically on avian anatomy, without being made a part of Dr. Merriam's collection.

The specimen is in excellent condition, being well cleaned and partly articulated. One foot including the tarsus still retains claws, scutes and skin. Three shot holes perforating the body of the sternum indicate the manner in which the bird was killed. Other bones are uninjured. The specimen is one of the prizes in our large series of skeletons that includes such other North American rarities as the Passenger Pigeon, Carolina Paroquet, Ivory-billed Woodpecker, and Great Auk.—ALEXANDER WETMORE, *United States National Museum, Washington, D. C., April 4, 1933.*

A Census of Birds' Nests.—During the 1933 season I have kept record of nests of birds found on my property at 40 Selborne Drive, Piedmont, California, with the results shown in the following tabulation.

	Kind of Bird	Number of Nests
1	Plain Titmouse	1, in a bird house
2	Bush-tit	2, also one never finished
3	Wren-tit	2, the same pair
4	Spotted Towhee	3
5	Brown Towhee	9, also one outside
6	Western Robin	2, the same pair
7	Vigors Wren	1, also another finished but not used
8	Junco	1, destroyed, but another built outside
9	California Quail	3, two destroyed, another outside also destroyed; others inside certain
10	California Thrasher	4, two unsuccessful; all 4 built by the same pair
11	Song Sparrow	1, abandoned after heavy rain; another built but not located
12	House Finch	2, some possibility of 12 and 13 being confused, but 6 together, more
13	Purple Finch	4 built
14	Green-backed Goldfinch	1, additional nests certain
15	Lawrence Goldfinch	1, another not exactly located
16	Nuttall Sparrow	1, also another outside
	Not yet identified	4
		42

In addition the following birds have been seen carrying nesting materials and (or) food for the young many times and over long periods:

17 Anna Hummingbird
18 Allen Hummingbird
19 Chipping Sparrow

The following are thought to have nested here this year:

20 Lazuli Bunting
21 Pine Siskin

No systematic search of the place has ever been made for nests, and some trees and bushes have not even been examined. It is quite certain that there are more nests within the property lines and the locations of some of them are known approximately, but the nests are not included in the totals.

The following are slide-rule figures and the only nests take into account are those definitely located. If the nests which are almost certain to be here are included, the figures representing concentration by nests would be further increased, and those representing concentration by species would be increased by about 31%.

The area within the property lines is..... 1.61 acres
The area exclusive of buildings is..... 1.53 acres
The area exclusive of buildings and roads is..... 1.29 acres

The approximate nest concentration per acre is, then, as follows:

Based on gross area..... 26.1
Excluding buildings..... 27.4
Excluding buildings and roads..... 32.5

The number of species represented per acre is, then:

Based on gross area..... 10.6
Excluding buildings..... 11.1
Excluding buildings and roads..... 13.2

There are some nests actually being built now, and there will undoubtedly be more later. There are also several not far outside the property lines. None of these has been included in the figures cited.—ERNEST I. DYER, *Piedmont, California, July 10, 1933.*

PUBLICATIONS REVIEWED

A paper of unusual merit, and pertinent to the economic field, is Mr. Ben H. Thompson's "History and Present Status of the Breeding Colonies of the White Pelican (*Pelecanus erythrorhynchos*) in the United States" (U. S. Dept. Interior, National Park Service, Contribution of Wild Life Division, Occasional Paper No. 1, pp. 10 + 82 + 4, 3 text ills.; our copy received August 5, 1933). After a scholarly analysis of the evidence in the case, Mr. Thompson concludes that the White Pelican is in a more precarious condition than the number of existing birds would indicate. It needs definite protection (which, for instance, is not now afforded at all in California), if it is long to survive. Bird reservations with controlled water-supply are essential. This bulletin can be had for the asking, as long as the supply lasts, by addressing the Office of National Parks, Buildings and Reservations, Hilgard Hall, University of California, Berkeley.—J. G.

ALDO LEOPOLD ON "GAME MANAGEMENT" (Scribner's, New York, 8vo, pp. xxii+481, 36 illustrations, price $5.00). —The reviewer has gotten more real satisfaction out of Aldo Leopold's latest book, "Game Management," than out of any other of similar nature he has ever read. It is essentially a finely organized chronicle of the latest ideas in the field of vertebrate natural history. I, personally, find many stimulating suggestions, quite new to my thinking along these lines. There is "good reading" offered also, in a general way, apt and now and then subtly humorous comment, so that the book is anything but dry, or interesting to the professional game breeder only.

The author is not loath to offer speculation, admittedly such; but this is well-considered, for the most part surely helpful. Now and then I find some formulation or even outright statement which rouses a critical reaction; but very quickly the author saves himself, and the reader, against any sin of finality. "*Trying to understand*" the biological community, along with the rules which govern its composition, is one thing and, the author rightly declares, "a worthy calling"; but to resort to conclusiveness of statement at this stage of our understanding would only retard continuing development in this difficult field of investigation.

The book is cleverly illustrated by Allan Brooks; every drawing carries an idea, often a whole lesson in applied ecology.

An enumeration of the chapter headings here would do no more than give an inkling as to the nature of the many vital problems dealt with. I am especially attracted by the ways in which the author deals with "Control of Cover," "Control of Food and Water," and "Properties of Game Populations."

I am struck with the aptness for use in natural history connections, of the term "cruising radius"—referring to the length of forage beat normally possible to an individual animal from its headquarters. This term has a somewhat different meaning from that of "territory," and hence is likely to be adopted in ecological discussions. Save for its application to ships and to airplanes, I do not recall having seen it before. Perhaps Leopold is thus to be credited with the first adoption of a useful term.

The chapter on "Predator Control" is exemplary as a fair treatment of this controversial subject. I can find no fault with its general tenor; the principles of animal ecology as at present understood seem clearly and fairly expressed. This chapter ought to be read, and studied until comprehended, by sportsman, fur-trapper, stockman, and extreme protectionist alike. The author's concluding comments must be read in their entirety, to be given full justice. I venture to quote (from page 252) a phrase or two: "There is only one completely futile attitude on predators: that the issue is merely one of courage to protect one's own interests, and that all doubters and protestants are merely chicken-hearted. ... [The sportsman may well] reserve his 'courage' until he has determined as closely as possible where his own interests [really] lie."

"Game Management" illustrates excellently a way in which materials originally published in widely scattered places (some of it, for example, in the CONDOR) may be brought together into one volume, critically assorted and organized for significance to a given general problem. A worthy book like the one now under review is thus built up of a great number of increments (observations and ideas) initially contributed by a host of persons in many, many places.

Leopold's chapter on "Game Economics and Esthetics" is, in effect, a plea for the

continuance of hunting, on the ground that h u n t i n g is instinctive and cannot quickly be suppressed. He even hints, if I get his meaning correctly, that there is danger of our non-persistence as a species if we refine too much "our manner of exercising the hunting instinct." But hunting *to kill* wild animals is certainly no more essential to beneficial exercise of this instinct than is battling one another *to kill* because of our instinct to fight. The latter instinct is now ideally exercised in modified degree, to the general good, as Leopold points out, by the substitution of athletic sports and games. By the same token, no attempt (because probably futile) need be made to suppress totally the hunting instinct; rather may it be directed apart from the point of actual killing. I, p e r s o n a l l y, have hunted with great zest, to bring down an objective, to bring it into my possession, to kill it. I have also, latterly, hunted with I think equal zest, bringing into play all those recreational values that Leopold stresses, but with the object of making census counts of the animals, of seeing how they behaved under given circumstances, or of seeing what their effects on their surroundings might be; and no individual animal was "brought to bag."

After studying animal natural history (including that of man) somewhat, from an evolutionary standpoint, I have come to have great respect for that perquisite which may be called modifiability. This feature of animals, varying in degree in different kinds to be sure, requires more or less time for its operation; but one observes that substitution or adaptation very frequently comes in, to hasten the rate of modification of a given structure or instinct. Wild-life values *for recreation* can be realized upon at least as beneficially, I am confident, without any killing at all, by substituting as an ultimate objective, the photograph, the banding record, the notebook record, or that intellectual attainment o f *understanding* which some think is the most desirable goal for any human activity.

If and wherever, on government or private lands, game is to be produced as a crop, then game management according to the natural history principles so soundly laid down by Leopold is to be practiced in order to get the best results. But we cannot grant that the production of a maximum number of animals to be shot for sport is the highest purpose to which to put the bulk of the uncultivated lands that belong to the public. There is a large and, I think, increasing group of persons who do not shoot, part of them because they do not want to, part of them because they are not economically situated so they can.

Someone, possibly L e o p o l d himself (and no one now has proven himself as well qualified by knowledge of animal behavior and human attributes, together, than he), should now write a treatise upon *wild-life administration* (by means of proper treatment of the environment) from the broadest point of view, with all the human, long-time interests fully heeded.—J. GRINNELL.

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

MAY.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held at 8:00 p.m., Thursday, May 25, 1933, in Room 2003, Life Sciences Building, Berkeley, with about fifty members and guests present and President Pickwell in the Chair. Minutes of the Southern Division for April were read. Proposals for membership were as follows: Roland Herrick Alden, 427 Embarcadero Road, Palo Alto, California, and Miss Alice Stewart Mulford, 1637 Spruce St., Berkeley, California, by E. L. Sumner, Sr., through the Western Bird-banding Association; Henry Sheldon Fitch, Museum of Vertebrate Zoology, Berkeley, California, by Jean M. Linsdale. A letter was read from Mr. A. C. Bent of Taunton, Massachusetts, expressing his appreciation of the action of the Cooper Club in electing him to Honorary Membership.

President Pickwell reviewed briefly the seasonal status of the bird-life in the vicinity of San Jose: the late lingering of Band-tailed Pigeons and Cedar Waxwings, the presence of a large number of migrating Western Tanagers, and the waning of the songs of many resident birds, some of which have already completed the nesting cycle.

Mr. E. L. Sumner, Sr., asked if other banders had found the Golden-crowned Sparrows staying later than usual, as he had. He gave as the latest record that of a bird trapped by Mrs. Edwin Blake on May 18, six days later than previous records show. Mrs. Lindsey answered

that her latest record of the Golden-crown this year at Hayward was of one trapped on May 16. Other things of interest in that vicinity which she had noticed were the presence for several days of three Western Tanagers, and the nesting, hitherto unseen by her, of Pileolated Warblers along San Lorenzo Creek. While staying at Furnace Creek Ranch, Death Valley, during the first week of April, Mrs. Lindsey met a small Mexican girl one morning on the way to school holding carefully a Ruby-crowned Kinglet in her cupped hands. The child had picked the bird up from the ground where it had evidently fallen exhausted during the heavy windstorm which had just occurred. Mrs. Mead reported that on the morning of May 21 members of her family had encountered a flock of about fifty Western Tanagers on the ground near Chico, many of them on the highway.

Mr. Brighton C. Cain, who a year ago banded young Red-breasted Nuthatches in a nest box at the Scout Camp at Diamond Canyon near Oakland, has found a pair of the birds this year nesting just outside of the camp in a hole made by Downy Woodpeckers in a dead pine. One of the pair wears a band. He also told of present conditions at the Los Baños Game Refuge where rising waters have, during the last two weeks, destroyed many nests.

The paper of the evening was "The Coast Bush-tit," as studied for the past two years on the Stanford campus by Miss Alice Baldwin. Miss Baldwin described in detail the habits of the large winter flocks, the breaking up of these flocks in January and February, the protracted nest building of February and March, the rapid construction of later nests, and somewhat of the rearing of the young. Many interesting facts were brought out and some which were puzzling as well, such as the fact that although both parents roost in the nest from the time that construction permits it, and during the period of egg-laying, yet all young hatch on the same day.

Adjourned.—HILDA W. GRINNELL, *Secretary.*

JUNE.—The June meeting of the Northern Division of the Cooper Ornithological Club was held at 8:00 p.m., Thursday, June 22, 1933, in Room 2003, Life Sciences Building, Berkeley, with about thirty members and guests present. In the absence of officers, Mr. Joseph Grinnell presided. Minutes of the Northern Division for May were read and approved. Minutes of the Southern Division were read. Mr. Ward B. Minturn, 2840 Mariposa St., Fresno, California, was proposed for membership in the Club by Mr. John G. Tyler.

Mr. Swarth commented on the description of the downy plumage of the Killdeer given in a recent English periodical. Mr. Grinnell briefly reviewed the book "Game Management," written by Aldo Leopold and published by Scribners. He pronounced it to be an excellent piece of work, the best yet in its field, and cleverly illustrated by Allan Brooks.

The topic of the evening's program was "Field Observations," and the first volunteer was Mr. William H. Behle who told of nesting birds noted on a month's field trip just completed, in Humboldt and Trinity counties, where, as elsewhere this year in California, the season is very late. The first nest found was that of a Monterey Hermit Thrush, three feet up in a hole in the side of a dead Douglas spruce. Western Bluebirds were nesting, Canada Nuthatches and Flickers were excavating nest holes, and three eggs of the Sooty Grouse were found exposed on a road by a brush-cutting crew. At the third camp made, a Junco brooded on her nest, undismayed when the tent was set up within a few feet of her nest-site. Mrs. Allen recorded Varied Thrushes with young, seen at beautiful Canyon Park, four miles from Scotia, in Humboldt County. There, at Dyerville, and on up the Redwood Highway to Crescent City, singing White-crowned Sparrows were heard and the difference noted between the song of that subspecies (Puget Sound) and the one (Nuttall) breeding in Berkeley. Mr. Grinnell remarked that sixteen miles inland, at 3000 feet altitude, near Coyote Peak, he had heard the former subspecies singing and was surprised to find it so far from the coast.

Mr. Ernest I. Dyer gave a concise account of the birds nesting at his Piedmont home, a list of so much interest that it is printed elsewhere in the CONDOR in its entirety. Mrs. Edwin B. Mead told of hearing Hermit Thrushes singing on June 13 at Santa Cruz Big Trees and of hearing the song of the Russet-backed twice and that of the Hermit four times, on a

three mile walk back of Brookdale on June 19. Mr. Wilfred Frost told of seeing a Great Blue Heron flying over the campus on June 22, and Mr. Grinnell reported Prof. Setchell's observation of the attempt of a Brown Pelican to alight in the swimming pool at the men's gymnasium on June 21.

Mr. B. D. Dexter reported upon the nest of a Red-tailed Hawk found seventy feet up on the guard of an electric tower in the San Joaquin Valley between Kingsburg and Corcoran. When found on May 12 the nest contained three young. The serrated edge of the guard, designed to keep birds from perching there, had served admirably to hold the foundation structure of the nest, a large tumbleweed. Mr. Dexter's contribution was illustrated with three excellent slides.

Mr. E. L. Sumner, Sr., gave a late Fox Sparrow record, of an individual which had repeated seventy-one times in his traps and which was found killed on May 13. He added that the bird had perhaps not migrated because of an injured claw. He told also of a Wren-tit, no. 91519, banded in 1925 by Mr. E. D. Clabaugh, trapped by Miss Erickson in February, 1931, and again in February, 1933, and now wearing two red celluloid bands on the right leg, one above and one below the aluminum band. This individual was seen by Mr. Sumner on June 22. Mr. Sumner pointed out that this bird is now at least nine years old. Mr. Glen Vargas reported that Western Wood Pewees have suddenly become common at Hayward and that he has found a Western Flycatcher nesting in a blacksmith shop near the town. Mrs. Allen told of visiting Mr. Brock's aviary near Oakland on June 14 and seeing a Cowbird nearby, attracted by the presence of three captive Cowbirds. On the next day Mr. Brock reported five free Cowbirds in the vicinity. Mr. Paul Lehman contributed notes on a day spent in Sonoma County, where he saw six Yellow-breasted Chats, ten Traill Flycatchers, one Osprey, and two Vaux Swifts. Mr. Grinnell gave a detailed account of a male Sparrow Hawk which was shot while eating a Hermit Warbler.

Adjourned.—HILDA W. GRINNELL, *Secretary.*

SOUTHERN DIVISION

MAY.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held on Tuesday, May 23, 1933, at 8:00 p.m., in the Los Angeles Museum, Exposition Park, Los Angeles. President Robertson presided and about 40 members and guests were present. Minutes of the April meeting of the Southern Division were read and approved. The membership application of Kenneth L. Renoll, 445 South Franklin Street, Hanover, Penn., proposed by W. Lee Chambers, was presented.

A letter from Dr. Murray Luck, requesting the Southern Division to appoint two members to represent it at the Affiliations Committee meeting to be held in conjunction with the annual meeting of the Pacific Division of the A.A.A.S., in Salt Lake City, was read. It was moved by Mr. Howard Robertson, seconded by Mr. J. R. Pemberton, and carried, that the President appoint such representatives. President Robertson gave a brief account of the annual meeting of the Cooper Club held in Berkeley, May 5 and 6, and called on Messrs. Willett and McCoy who confirmed his report that it was a most enjoyable and successful meeting.

Mr. Willett stated that he had visited San Diego over the week-end and learned that Mr. Frank Stephens had had a very severe heart attack. He called on Mr. Stephens and found him improved, though still confined to his bed. Mr. Willett suggested that the secretary write to Mr. Stephens expressing the hope and desire of the Southern Division that his recovery should be prompt and complete. The secretary was so instructed.

President Robertson opened the subject of the roosting places of Vaux Swifts while in migration by telling of seeing large numbers of them flying in a compact mass around eucalyptus trees on San Gabriel Boulevard, as if they were preparing to roost in those trees. He also told of a report from Miss Blanche Vignos of hundreds of Vaux Swifts having been taken in a dead and dying condition from the chimney of a cottage in Santa Barbara. The swifts were found to have gone down the chimney and into the rooms of this unoccupied cottage. The doors and windows were opened and the swifts driven out and the lower end of the chimney was closed with sacks to prevent the swifts from re-entering the rooms. The next day it was noted that they had continued to go down the chimney. On removing the sacks hun-

dreds of dead and dying swifts were found. These were taken to the ornithologist of the Santa Barbara Museum who examined the stomachs of a few and found them to be empty. It is assumed that the birds died of exhaustion and suffocation. Mr. W. J. Sheffler of the Whittier Ornithological Academy, stated that tens of thousands of these swifts settled down on the city of Orange on the evening of May 9, and clung three or four deep to the trees. The next morning hundreds were lying dead on the ground. It was his belief that these birds had been turned back in their northward migration by a storm which was then over the Tehachapi Mountains.

Mr. Roland C. Ross introduced Mr. Theodore H. Scheffer, of Puyallup, Washington, and visiting southern California during the last few winters studying the pocket gopher. Mr. Scheffer spoke briefly of the Pacific Northwest Bird and Mammal Society, of which he is a trustee, and of his pleasure in meeting with the Cooper Club of which he has recently become a member.

The program of the evening was given by Mr. Wright M. Pierce, who illustrated his paper on "Life History Studies of the Red-bellied Hawk" with a series of splendid motion pictures showing the development of the young hawks from the egg to the time of leaving the vicinity of the nest in the San Bernardino Valley.

Adjourned.—HAROLD MICHENER, *Secretary pro tem*.

JUNE.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held at 8:00 p.m., Wednesday, June 28, 1933, at Los Angeles Museum, Exposition Park, Los Angeles, with forty-two members and guests present and President Robertson in the Chair. The minutes of the May meeting were read and approved. Minutes of the Northern Division for May were read by title only. The membership application of Cyrus F. Tolman, Jr., 506 Mayfield Ave., Stanford University, California, proposed by W. Lee Chambers, was presented.

President Robertson brought to the attention of the Southern Division the contents of a letter received from Dr. J. Murray Luck, secretary of the Pacific Division of the A.A.A.S., in which it was asked for an expression of opinion regarding the advisability of changing the 1935 meeting date from June to September. After discussion, it was moved by Dr. Raymond B. Cowles, seconded by Dr. Loye Miller, and carried that the Southern Division of the Cooper Ornithological Club suggest the month of June as its preference for the meeting date of the A.A.A.S., because (1) should the meeting be held in September it would mean a hurried trip for eastern academic members due to the re-opening of colleges and schools; (2) if held in June, at not too early a date, the schools would be closed and there would be time for sightseeing after the meeting; (3) southern California is usually cooler in June than in the month of September.

A letter was read from Mr. A. C. Bent of Taunton, Massachusetts, expressing his appreciation of the action of the Cooper Ornithological Club in electing him to honorary membership. Also, a letter was read from Mr. Frank Stephens, of San Diego, California, acknowledging his thanks for the sympathy and good wishes extended by the Southern Division and stating that he was "as well as ever."

Mr. A. Brazier Howell, an old Southern Division member, now a resident of Baltimore, Maryland, was introduced by Dr. Loye Miller and briefly recalled earlier days. He then spoke of the unique position held today by the Cooper Club in the United States, of the loyalty among its members, of the intimate part it has played in the development of ornithology in the West; and he expressed his regard for the high degree of training which the young western ornithologist is receiving. His inability to attend any of the annual meetings of the Cooper Club was regretted, and the suggestion was made that if the meeting could be held in June in all probability eastern members might find it more convenient to be present.

Other members present reported on many interesting field observations covering California in general and southwestern Sonora, Mexico, in particular; after which, Mr. Wright M. Pierce introduced a live, male, Prairie Falcon. The bird, secured at about the time it was ready to leave the nest, had been in captivity five weeks and was now quite tame, very handsome, and much admired. Life history notes regarding family, food habits, disposition, behavior, etc., were presented both for entertainment and discussion.

Meeting adjourned. — LAURA B. LAW, *Secretary*.